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OIL AND GAS JOURNAL

TECHNOLOGY

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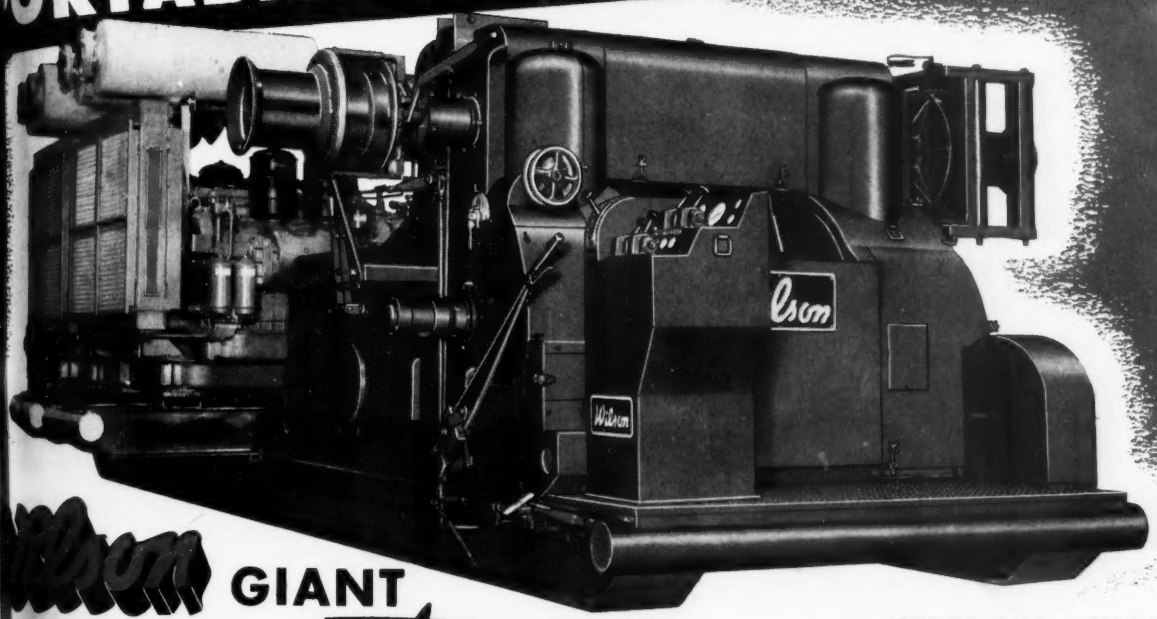
COLLEGE

The last word in
PORTABILITY..ROADABILITY



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OVERALL WIDTH
UNDER 11 FEET

EASY TO MOVE — drawworks, transmission, engines, compound and pump drive shaft *can be Transported in single load.* Overall width under 12 feet.

SIMPLE TO OPERATE

- PANEL CONTROL, The most convenient control system.
- SIX SPEEDS FORWARD, TWO REVERSE, with automatic speed change.

40" BETWEEN DRUM FLANGES, Line winds on fewer layers,—less cutting.

COMPLETELY *CIRCULATING WATER COOLED BRAKES* on flame hardened brake rings.

DIRECT DRIVEN Hydromatic Brake on separate skids, easily mounted or dismounted.

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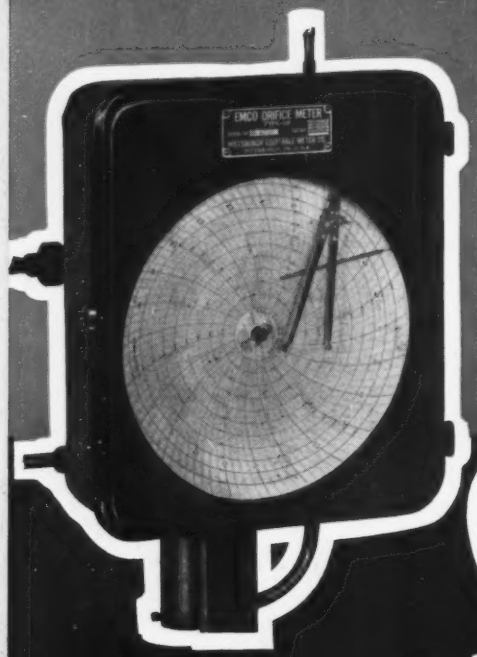
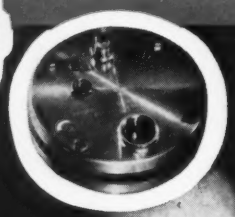
ROCKWELL EMCO

ORIFICE METERS

WITH

MACNICK CHART CLOCK





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Right on the job . . . and right for the job, too favorite with the operating man who appreci the fully accessible arrangement of parts, "Speed-Lok" chart hub that never gets lost, the lo lived, accurate Macnick clock, the chart range that identifies the meter chart at a glance, and ab all, the service convenience of a design that can quickly disassembled and built up using comm every day tools.

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For large volume orifice meter measurement at lowest cost per cubic foot measured—specify Em

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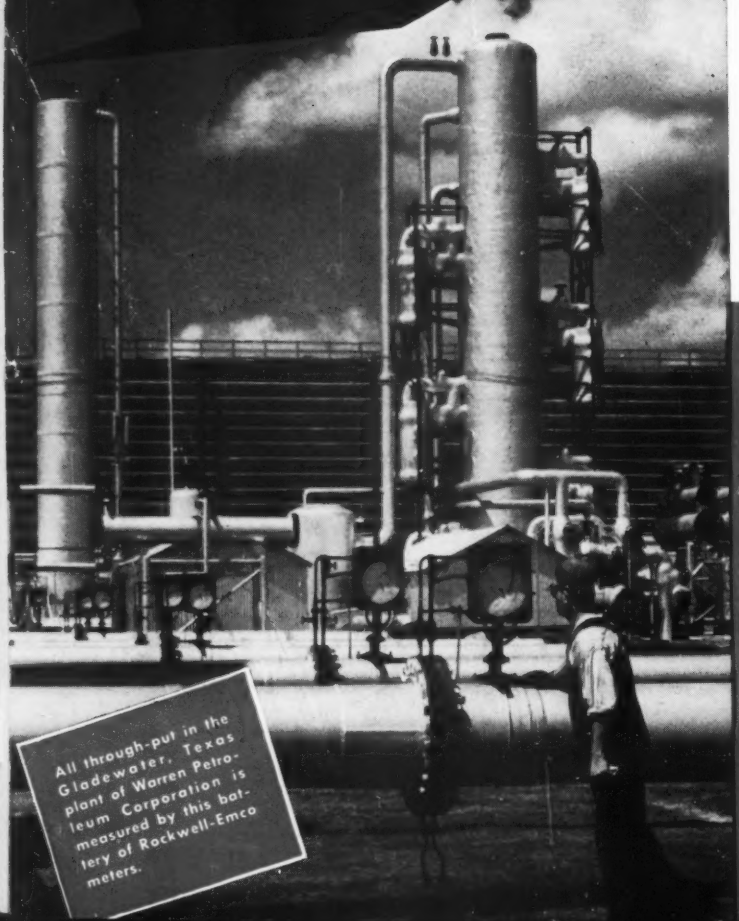

All through-put in the Gladewater, Texas plant of Warren Petroleum Corporation is measured by this battery of Rockwell-Emco meters.

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IMPROVES ORIFICE METER ACCUR
SAVES ON CHART COMPUTATION CO

Rockwell-Emco Integrators mechanically a actly calculate the extension of orifice meter c Assure that the accurate record made by the will be converted into accurate totals. P verified record of results. One machine wi culate up to 300 average charts a day.

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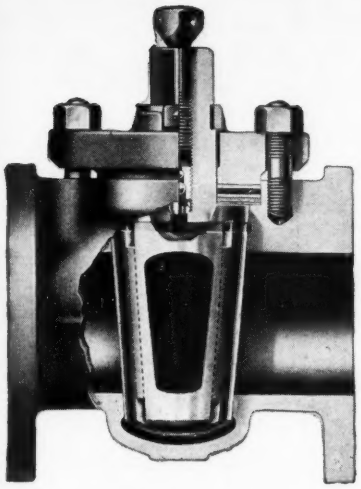
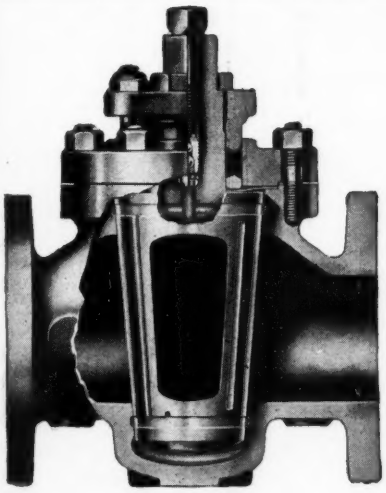
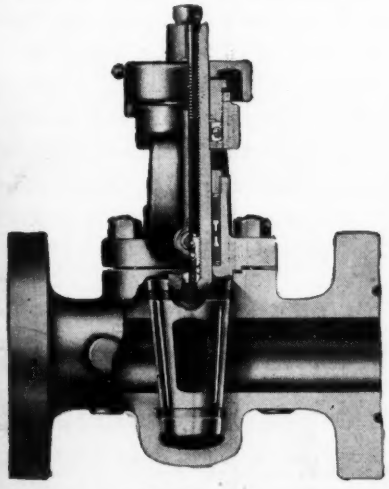


Single Gland Type



Regular Gland Type



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When handling acids, condensates, dyes, oils, solvents, solutions, slurries and hundreds of similar "troublesome" liquids, you get better control, more dependable service and lower operating costs with Walworth Lubricated Plug Valves.

These valves have proved their ability to give easy operation . . . fast action . . . tight shut off . . . greater protection against corrosion. Turning is smooth and easy; just a ¼ turn from full-opening to full-closing. Moreover, Walworth Lubricated Plug Valves are tightly sealed against leaks — *whether open or shut.*

Walworth Lubricated Plug Valves are available in sizes ½" to 26" for pressures from 125 to 5,000 psi, and for vacuum requirement. For further information about Walworth's Complete Line of Lubricated Plug Valves, see your Walworth distributor or write for Catalog No. 46L.

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THE USE OF THREAD COMPOUNDS

Compiled by **I. H. GRANCELL**

Manufacturer of

Bestolife Lead Seal

1601 East Nadeau Street **Los Angeles 1, California**

The evolution of the ordinary thread connections, as we know them today, is an interesting story of trial, error and success, taxing the ingenuity and engineering skill of many scientific men. Threaded connections are used in countless ways in our modern life. In spite of this, most of us do not realize what an important part they actually do play. The lowly threaded fitting has invaded all parts of our machine age. Every machine, regardless of its type or description, has many threaded parts. We eat, travel, transport, in fact our very existence and comfort depends to considerable extent on pipe and threaded fittings of various description. A railroad locomotive is little more than a great mass of threaded fittings and so it is with all of our modern machines. There are millions of miles of pipe in use and they are mostly connected together by flanged or threaded joints. This tremendous variety of threaded connections is of immense value to our civilization, but also presents many problems.

Thread cutting has progressed as the need developed in each particular industry. Many types of threads have been devised and machines for high speed production of these threads have been produced. This has all helped to produce better threaded joints at less cost which in turn has greatly aided human progress.

In the early days of the pipe fitting trade and in other work involving use of threaded connections, it was known that no matter how well threads were cut, there was difficulty in making and breaking joints unless the threads were coated with some sort of protective material. Oil and grease were used for this purpose. then mixtures of these materials with red and white lead, zinc, graphite, etc. The metallic base thread dopes were developed with the idea of filling the space between the threads with solid material to keep the thread surfaces from contacting each other as much as possible. These compounds proved that they were unable to do their required job. Pipe joints leaked and caused waste of valuable material and time. They froze and could not be taken apart for maintenance. Threads corroded and threaded fittings were difficult or impossible to remove, which meant the loss of expensive parts and equipment. A really practical thread compound would be able to eliminate these difficulties. The necessary requirements were—

1. It should be both non-expanding and non-contracting.

2. Its consistency should remain unchanged regardless of extremely high or extremely low temperature.

3. It should prevent friction when the joint is being made up.

4. The use of the compound should protect and improve the condition of the threads.

5. It should be of such a nature that it might be used on all joint connections regardless of their nature. (Air, gas, oil, steam, ammonia, alkali, acid, hydrocarbon, chloride or any other chemical line).

In short, it should always allow full advantage to be taken of each of the threads of an individual joint.

The need for a more efficient pipe joint compound gave Mr. I. H. Grancell the idea, twenty years ago, of using pure metallic lead as the base for a new type of compound. He experimented until he found materials, which when blended with this lead would perform the function of a lubricant in a cold drawing process. This was necessary because when making up a joint, two unyielding pieces of metal are forced together under great pressure and there is a very strong tendency for them to pressure weld together. The thread compound must have the ability to act as a cushion between the threads as they come together allowing them to move by each other smoothly and easily. In his laboratory, Mr. Grancell worked until he developed a compound which would reduce friction, allowing any joint to be made up to its maximum design position, helping to smooth and work harden the thread surfaces instead of tearing and grinding them. The new thread compound which was called Bestolife No. 270 made possible tight and efficient joint make-up and also allowed these joints to be taken apart without difficulty.

This new thread compound was used extensively first in the oil fields in the drilling end of the industry. A drilling rig drives a long string of pipe into the earth and until the introduction of Bestolife there was a great deal of difficulty with the threaded connections of the drill string. This was due to ruined joints caused by the drilling mud leaking through the threads, gradually wearing a pathway through and finally making a joint failure. The use of Bestolife made possible extremely tight make-up and efficient sealing of these joints which allowed them to function as was necessary and greatly lengthened their useful service. In the past twenty years, Bestolife has become the standard of the oil industry as far as thread compounds are concerned and it is widely used in oil fields throughout the world.

Many petroleum refineries have been using Bestolife for years on threaded pipe, flange bolts and numerous high temperature threaded fittings. Several large railroads have made extensive use of the compound on pipe joint connections including steam, air, water and oil line threaded joints, boiler and cylinder studs, locomotive stay-bolt caps, boiler plugs; on Diesel locomotives for pipe joints, head studs, exhaust manifold studs and bolts and as a lubricant for pressing in bearings. Refrigerants and other chemicals do not affect Bestolife and it is widely used in the refrigeration field and in chemical plants. Bestolife is extensively used in the maintenance of aircraft engines and in the marine industry. The rubber industry uses it on high temperature flanged connections and for threaded pipe joints.

Bestolife has proved that it will give maximum thread protection in countless industries. It will not harden or separate regardless of the time in a pipe joint or storeroom. Bestolife No. 270 is packed in 5#, 20#, and 50# containers and is sold by numerous industrial jobbers in major United States cities and by oil field supply houses in all parts of the world.

NOTE

Mr. I. H. Grancell has written this pamphlet for the special use of the consumers of Bestolife. It is a discussion on the "USE OF THREAD COMPOUND," for assembly of oil field equipment, locomotives, pumps, valves, boilers, furnaces, oil burners, air brakes, refrigeration equipment, for use in aircraft, industrial engines and on industrial motors. It can be used in the maintenance and servicing of all types of equipment, involving threaded connections and press fits. The facts presented are based upon the author's personal experience of over half a century spent in manufacturing, operating and servicing machinery and equipment.

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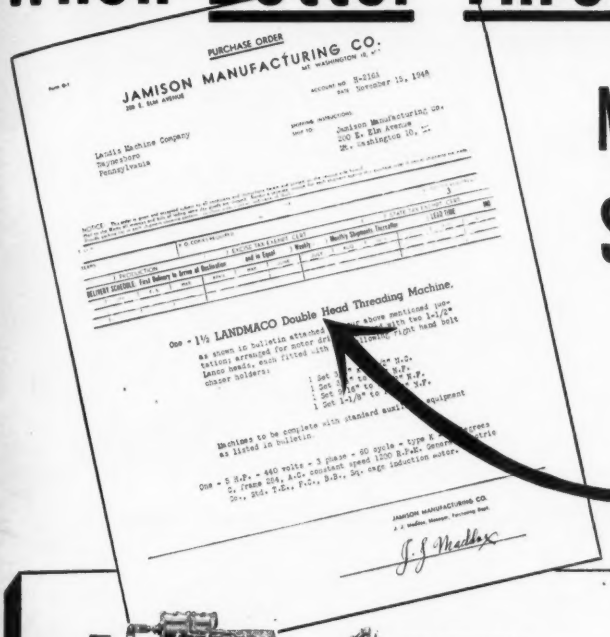
MANUFACTURERS SPECIFY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One - 1½ LANDMACO Double Head Threading Machine,

Machines to be complete with standard auxiliary equipment as listed in bulletin

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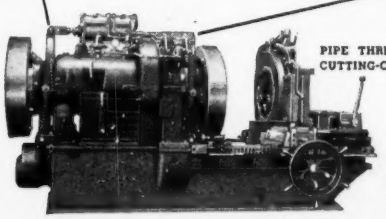
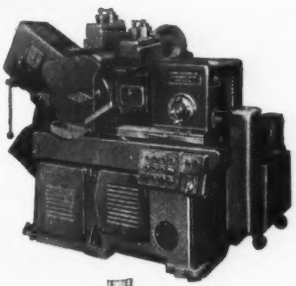
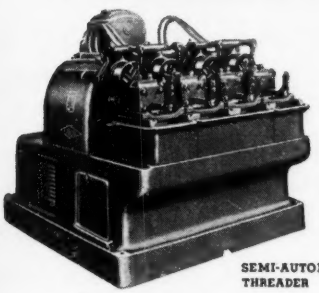


PIPE THREADING & CUTTING-OFF MACHINES

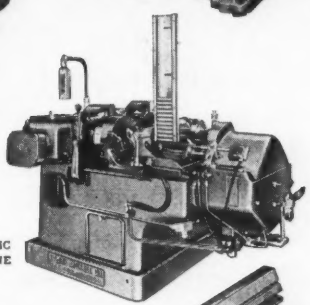


CENTERLESS THREAD GRINDER

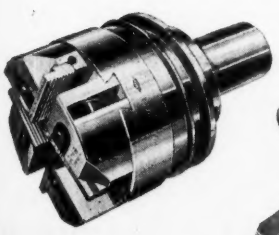
LANDMACO THREADING MACHINES

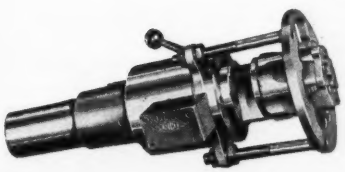


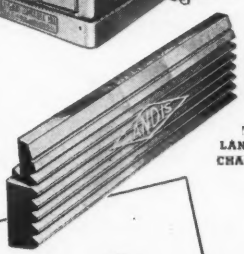
SEMI-AUTOMATIC THREADER



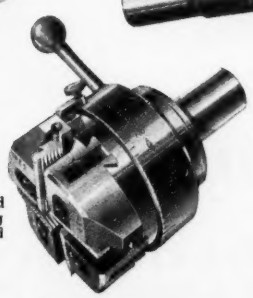
AUTOMATIC NIPPLE MACHINE







THE LANDIS CHASER



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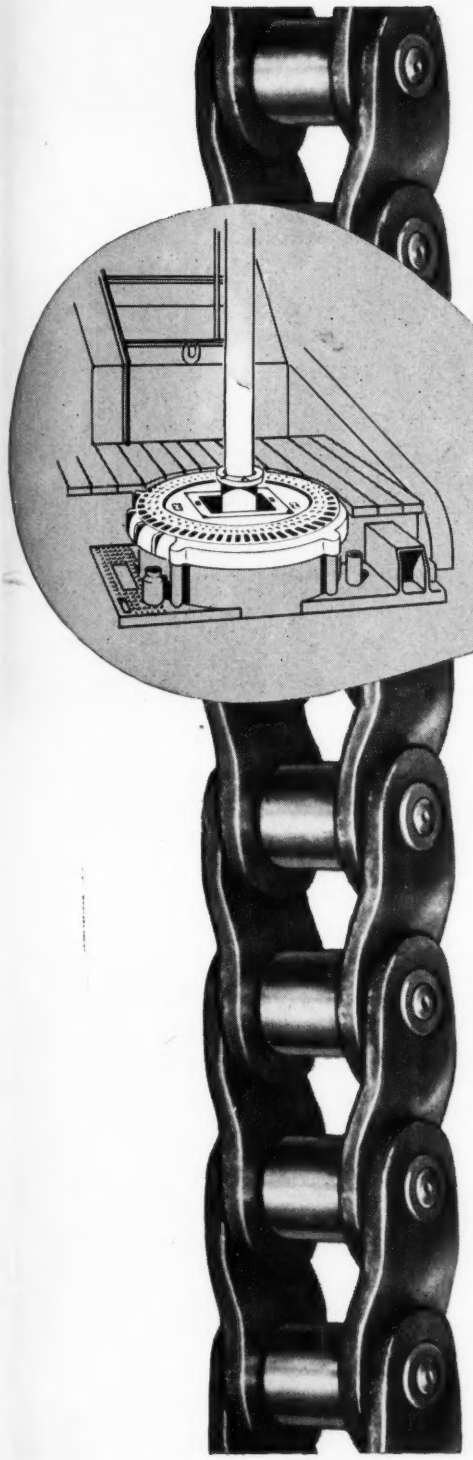

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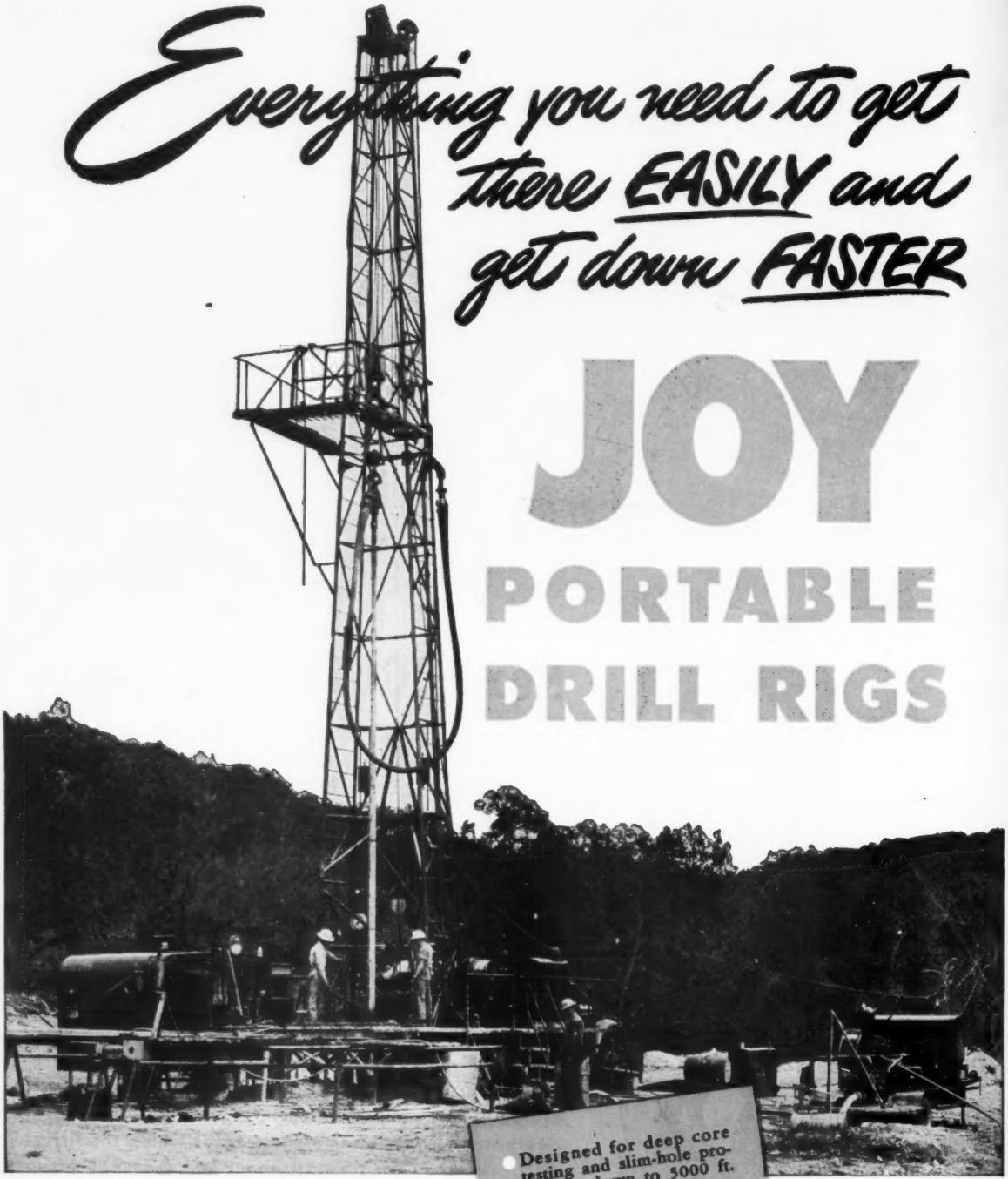

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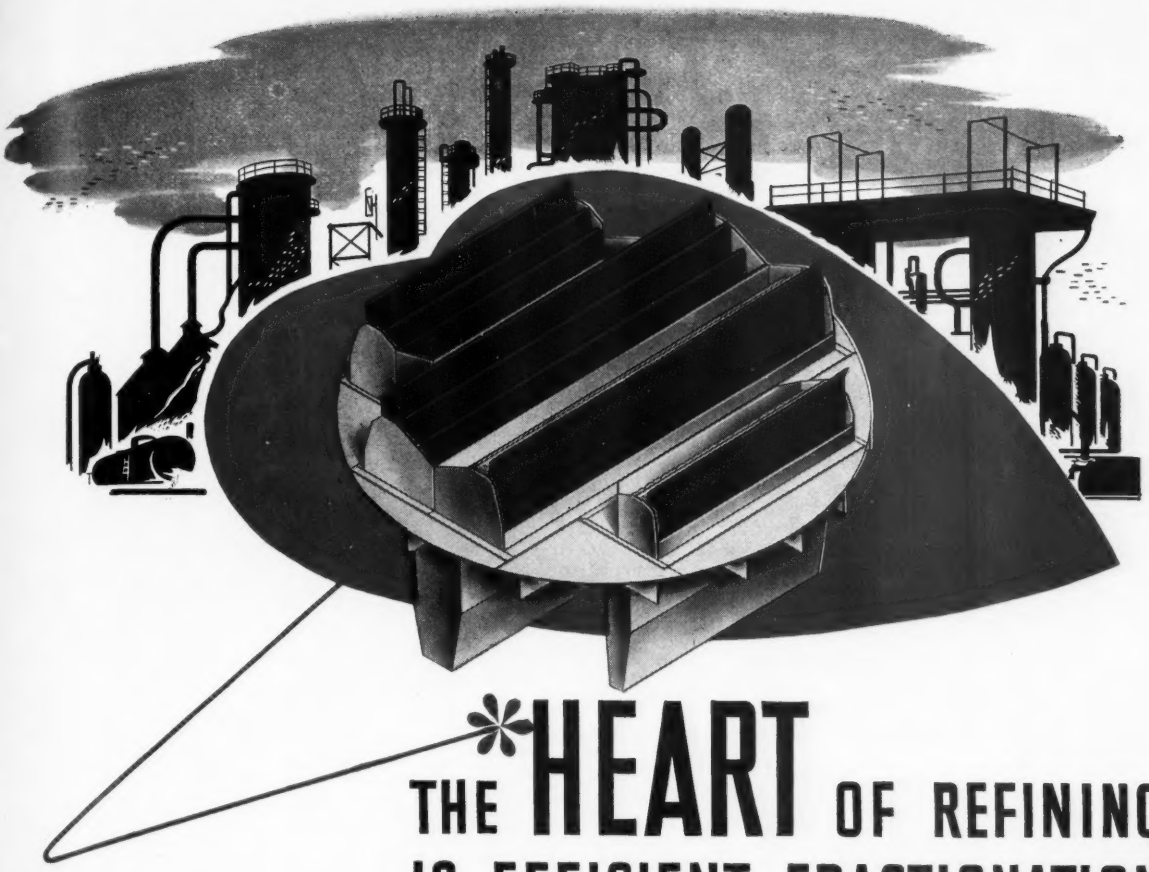

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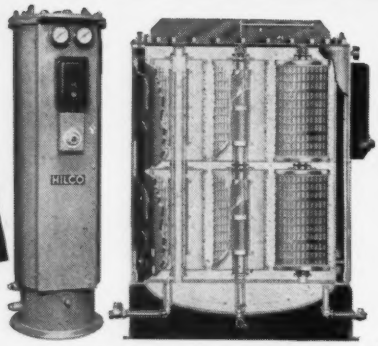

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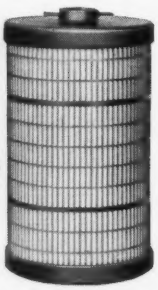
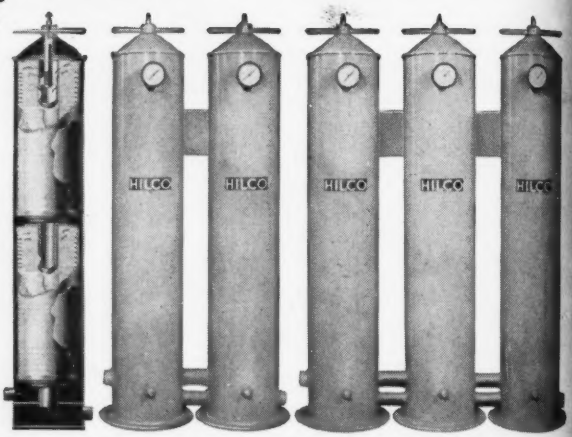
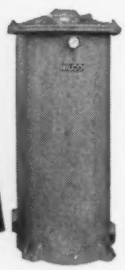


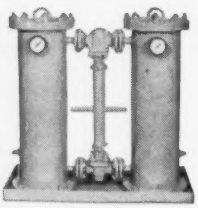
*Both are interchangeable at any time.



● Hilco Hyflow Oil Filters use Hilite-Fuller's Earth for filtering straight mineral and fuel oil or Hiltex-Cellulose, the all-purpose filtering media for heavy duty detergent oils and fuel oil.

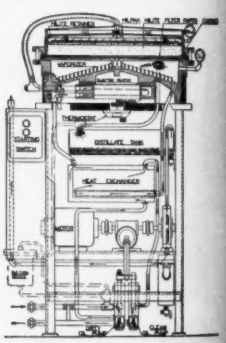
HILCO HYFLOW OIL FILTERS "C" SERIES





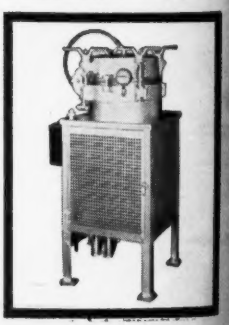
● For Lube and Bulk Fuel using one or a multiple of 7¼" x 18" Filter cartridges offering the maximum in filter area and correct depth for high flow rates and efficient filtration. Available in simplex type with or without heaters, duplex without heaters.

HILCO OIL RECLAIMERS



● For direct connecting to one or more engines for perfect and complete lube oil purification—removing carbon sludge, abrasives, tarry matter, and acids, water and fuel dilution—and color restoration.

Hilite-Fuller's Earth for filtering straight mineral oils—ADSTAY DISCS for heavy duty detergent oils.



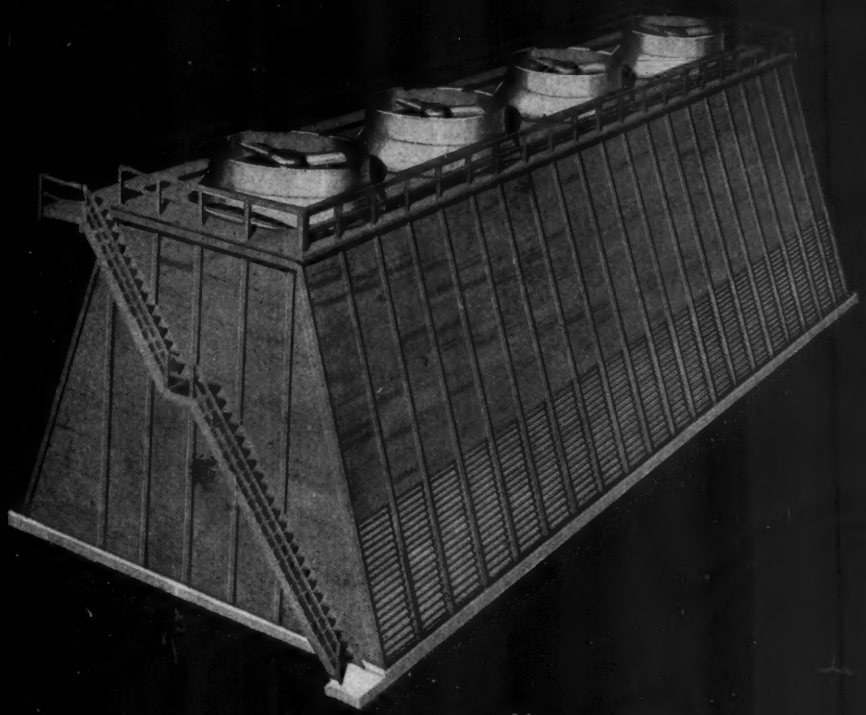
CLEAN OIL MEANS CLEAN ENGINES LOWER MAINTENANCE COSTS . . . .

WRITE TO-DAY! FOR FREE LITERATURE

LET US RECOMMEND THE CORRECT OIL PURIFICATION EQUIPMENT

THE HILLIARD CORPORATION 23 West Fourth Street, Elmira, N. Y.

THE *New* HUDSON
performance COOLING TOWERS



1 IMPROVED AIR FLOW AND AIR-WATER CONTACT

2 ECONOMY IN FABRICATION AND ERECTION

3 LOWER OPERATING COST

4 GREATER STRUCTURAL STRENGTH

ENGINEERS *CONSTRUCTORS*

HUDSON ENGINEERING CORPORATION

FAIRVIEW STATION HOUSTON, TEXAS

United Gas Line Company, Carthage, Texas. *Ellwood M. Payne* photo.

It'll still be new ten years from now

THIS piping at United Gas Line Company's plant is another sweetly streamlined example of leakproof permanence achieved with *the fittings that become part of the pipe.*

That means Tube-Turn welding fittings. They are preferred for large-scale piping that must remain safe and sound for years with little or no maintenance. Their butt-welded joints simply can't leak. Their forged-in strength equals or exceeds the strength of pipe. Their smooth inner walls and full effective radius minimize friction and erosion.

And yes, they are easy to install. Dimensional accuracy and true circularity make alignment a cinch. The absence of excess bulk permits compact, economical piping assembly.

For good service in good connections, deal with the Tube Turns distributor. He handles the biggest line of welding fittings.

TUBE TURNS, INC.

240 E. Broadway, Dept. D, Louisville 1, Ky.

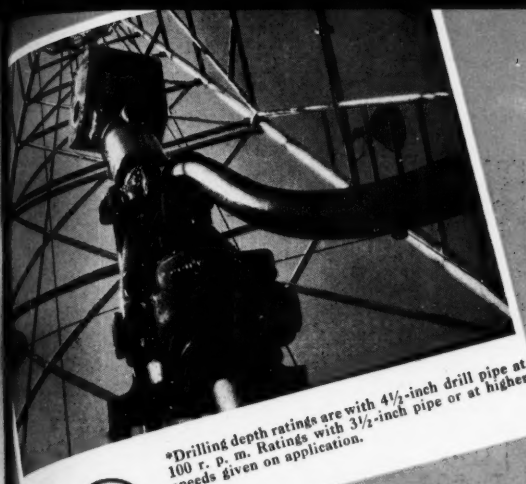
District Offices at New York, Philadelphia, Pittsburgh, Chicago, Houston, Tulsa, San Francisco, Los Angeles

TUBE-TURN

tt

WELDING FITTINGS AND FLANGES

Write for the new and revised Tube Turns' chart of "Pipe and Fitting Materials". Covers ASTM and other specifications, chemistry, service temperature limits, welding data.

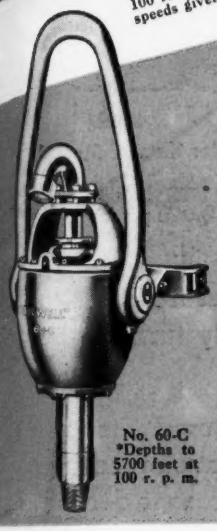


*Drilling depth ratings are with 4½-inch drill pipe at 100 r. p. m. Ratings with 3½-inch pipe or at higher speeds given on application.

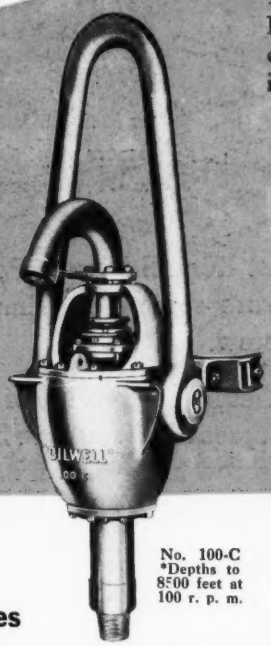
"Oilwell" Swivels give you 10 important advantages

...and the choice of a complete line for all drilling requirements

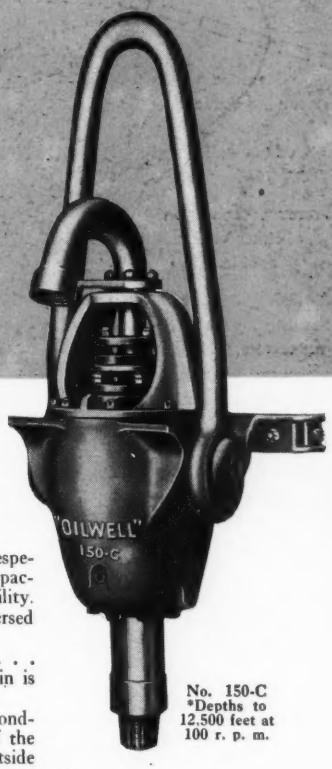
IF you plan to drill the world's deepest well, you will find a swivel in the "Oilwell" line that is excellently suited for the job. If you want a long-lasting, well-designed swivel which will give comparable performance for shallow drilling, you will also find it in this complete line of four sizes.



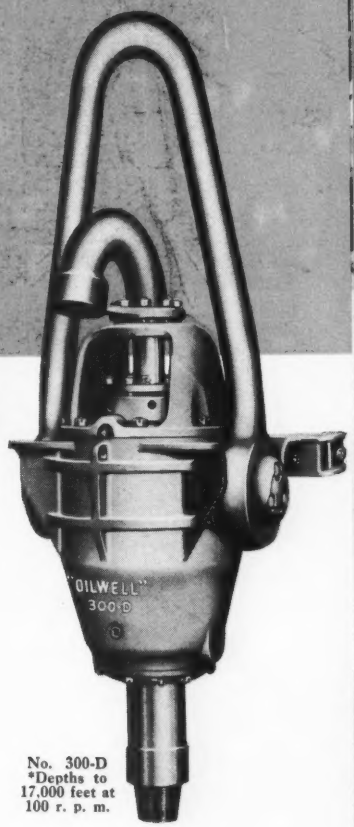
No. 60-C
*Depths to 5700 feet at 100 r. p. m.



No. 100-C
*Depths to 8500 feet at 100 r. p. m.



No. 150-C
*Depths to 12,500 feet at 100 r. p. m.



No. 300-D
*Depths to 17,000 feet at 100 r. p. m.

Keep in mind these 10 important features

1. **Heavy-Duty Roller Bearings**—Main bearing is full-apex type, especially designed for its use and proved by outstanding service. Wide spacing of the two bearings carrying radial load assures maximum stability.
2. **Circulating Oilbath Lubrication**—All bearings are constantly immersed in a continuously circulating bath of lubricating oil.
3. **Heat-Treated Forged-Steel Body with Integral Tool-Joint Pin . . .** has large-diameter fluid passage. A left-hand A. P. I. tool-joint pin is cut directly on the body, with ample stock for rethreading.
4. **DI-HARD Wash Pipe**—Abrasion-resisting lining of DI-HARD, bonded to the inside, protects the wash pipe from the cutting action of the fluid. A ground-and-polished armor of DI-HARD bonded to the outside greatly extends the wear-life of both wash pipe and packing.
5. **Self-Sealing Wash Pipe Packing** . . . requires no adjustments. A convenient fitting facilitates lubrication with waterproof grease.
6. **Streamlined One-Piece Cast-Steel Housing** . . . provides rigid support for all working parts and prevents distortion under heavy loads.
7. **Shock-Absorbing and Wear-Preventing Link-Rest Pads** . . . protect the swivel and the links from destructive hammering of metal against metal.
8. **Large Diameter Heat-Treated Forged-Steel Bail** . . . of one-piece construction has increased thickness at the top to compensate for hook-wear and to give extra strength.
9. **One-Piece Cast-Steel Housing Cap** . . . provides utmost accessibility to the wash-pipe stuffing box.
10. **Long-Radius Heat-Treated Cast-Steel Gooseneck** — Enlarged fluid passage at bend decreases fluid velocity. This feature combined with long radius, reduces flow-restriction and fluid cutting.

OIL WELL SUPPLY COMPANY

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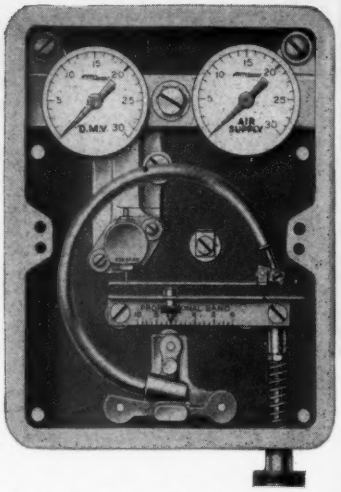
USS "OILWELL"

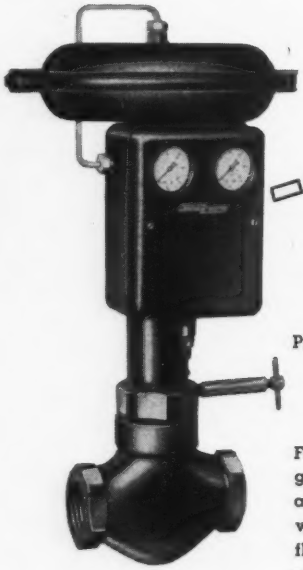
UNITED STATES STEEL

FINGER-TIP PRESSURE CONTROL

WITH HAIR-LINE ACCURACY!



This Kieley & Mueller Kontrol Master Pressure Pilot Controls Reducing or Back Pressures to 10.000 p.s.i.



Mounted on the Valve or on the wall.

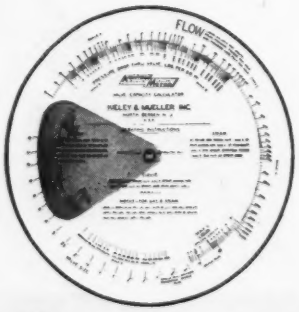
Pressure connection at either back or side.

For high pressure gas service, or steam and liquid service with relatively small flows, type 46V-1850 utilizing air or non-corrosive gas as an operating medium.

You adjust Kontrol Master Pressure Pilots to fine pressure settings by simply turning the Vernier screw.

Changes in throttling range of from 1% to 75% of the pilot pressure range are made by moving the small screw in the center of case to desired position on the proportioned band.

And you can change from *direct* to *reverse* action at a moment's notice! Just loosen the two screws that hold the pilot assembly to the manifold block and rotate assembly 180°. This does not disturb bourdon tube or nozzle block.

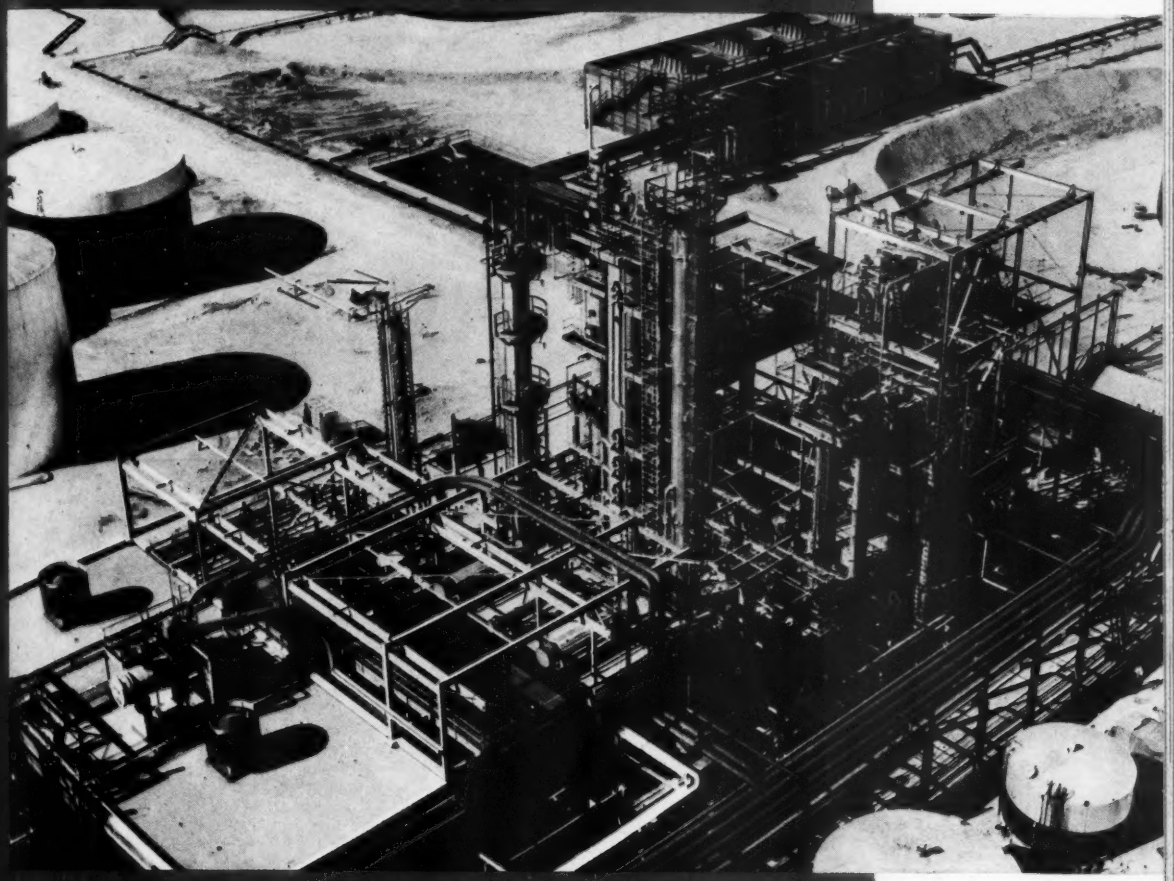


Kieley & Mueller engineers have built plus values into the Kontrol Master Pressure Pilot.

You will appreciate its flexibility of control, its wide range of adjustments and the improved maintenance condition that results from the elimination of small tubing. For specification data, ask for Bulletin 4000.

VALVE CAPACITY CALCULATOR:
Thousands of process industry engineers have found this circular, slide-rule type scale invaluable for calculating valve capacity. Correction scales for steam quality, liquid and gas specific gravity and a flowing temperature scale for gases are included. Send for yours. There is no charge, but please make request on business stationery.

KONTROL MASTER
KIELEY & MUELLER
NORTH BERGEN, N.J.



crude thruput doubled . . gasoline octane level raised

CONTINENTAL
OIL COMPANY'S
DENVER
REFINERY

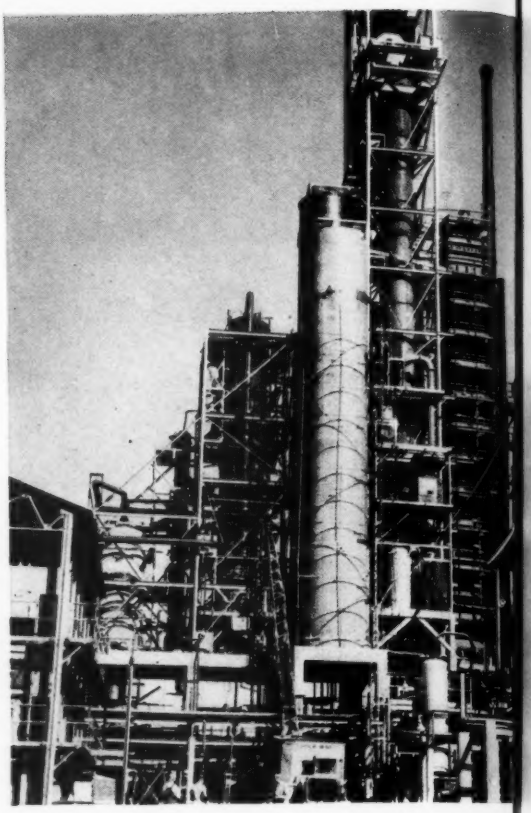
An interesting example of integrated expansion

The new Lummus-built catalytic cracking unit at Continental's Denver Refinery was recently completed. Despite unfavorable weather conditions it went on stream about the middle of November, and within two days it was operating at design capacity.

The catalytic cracking unit was part of an integrated expansion program that included the design and construction by Lummus of three other new units—gas recovery, catalytic polymerization, liquid propane gas fractionation—and the modernization by Lummus of a thermal cracking unit.

Continental's Denver Program is an interesting example of refinery expansion accomplished by integrating new units with modernized existing facilities. This program practically doubles the crude thruput at Denver and raises the octane level of the finished gasoline.

Lummus engineers are available for a thorough study of individual problems involving the modernization or expansion of existing facilities and the projection of new programs.



THE LUMMUS COMPANY
420 Lexington Avenue, New York 17, N. Y.

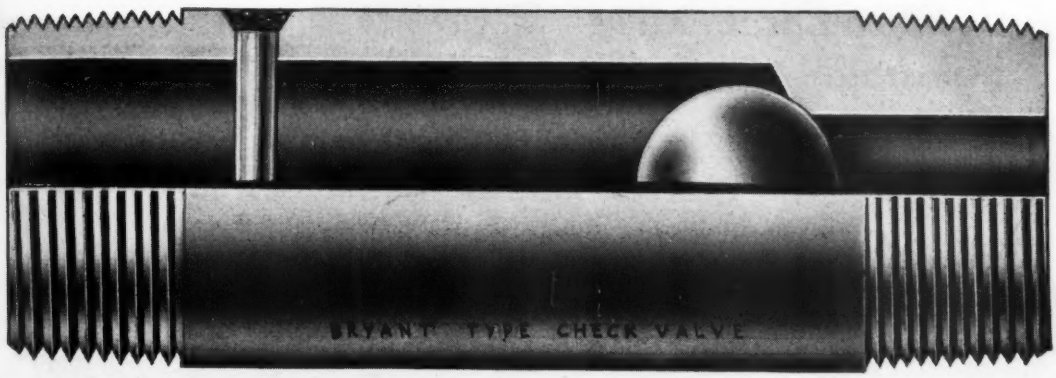
LUMMUS

CHICAGO—600 South Michigan Avenue, Chicago 5, Ill.
HOUSTON—Mellie Esperson Bldg., Houston 2, Texas
LONDON—525 Oxford Street, London, W.1, England

OIL STEEL CHEMICAL

A-1 BRYANT CHECK VALVES

ASSURE LONG-LIFE, DEPENDABLE OPERATION



Designed for long service, the Bryant Check Valve represents the ultimate in simplicity. There is only one working part . . . the stainless steel ball that moves in the body with line pressure. The Bryant Check Valve fills a long felt need in the oil fields in the following applications: boiler feed lines, air lines, gas lines, flow lines, blowout preventer lines, oil lines and any other line service where a dependable check valve is needed. The stainless steel ball is accurately ground and provides a positive seal. The seat is softer than the ball so that, as wear occurs, the ball continually makes a new, positive seat.

AVAILABLE IN SIZES FROM ¼" to 6" in pressures up to 5000 LBS. W. P.

ASK YOUR A-1 REPRESENTATIVE OR WRITE FOR DETAILS.

A-1 Bit & Tool Company

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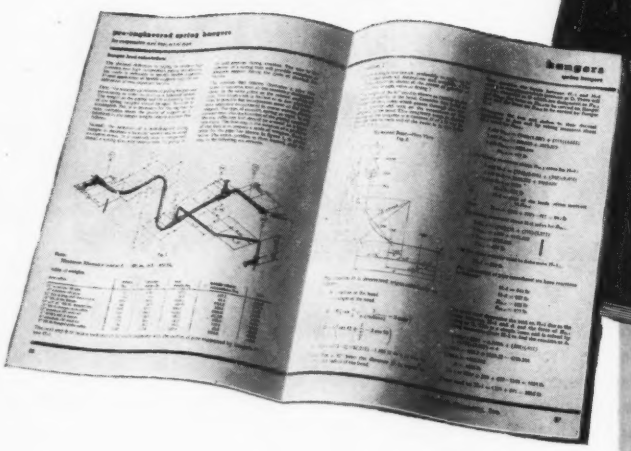
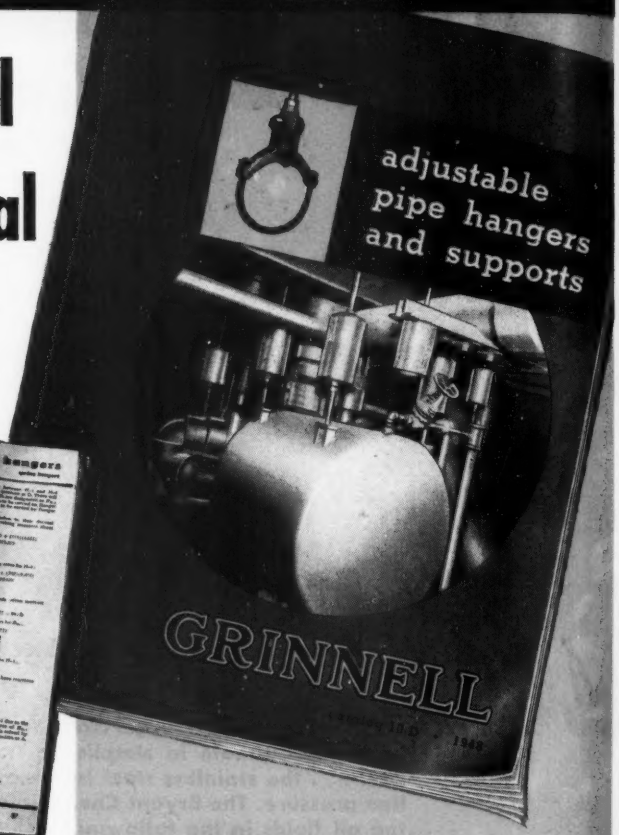
You'd pay real money for this book!

The NEW Grinnell Pipe Hanger Manual

. . . and comprehensive catalog 10-D





FIRST TIME . . . in one 92-page book every pipe hanger, part and accessory, with full instructions for easy selection and correct specification.

Grinnell engineers worked for months to put into one orderly, completely illustrated book everything you need to write hanger specifications precisely. It's a complete catalog of Grinnell Pipe Hangers and Supports and a comprehensive manual . . . all in one. It's worth money to you but it doesn't cost you a penny. Write for your copy today. Grinnell Company, Inc., Providence 1, R. I.

- ★ Maximum recommended load rating for each hanger at various temperatures with minimum safety factor of 5
- ★ How to make load calculations for spring hangers, step by step, with drawings
- ★ Constant support or variable spring hangers may be selected and specified from simple load tables
- ★ Method of calculating take-out and determining hanger rod lengths . . . schematic drawings and formulas
- ★ Standard specifications with tables of maximum spacing between pipe supports, load carrying capacity of steel hanger rod, also rod size as determined by pipe size for fire protection work
- ★ A complete line of cast and malleable hangers ranging from the simplest plumbing or heating installation to the most complicated power plant installation

GRINNELL

Cummins Diesels Save Fuel

Compare the cost! **Operate a Cummins Diesel alongside other engines—diesel, gasoline, or butane—then check your fuel bills. Here's what our customers report:**

Annual Savings: $2626.50

Yearly fuel costs for a Cummins-powered tractor used on a 750-mile round trip highway haul are $2626.50 less than the fuel costs for a gasoline-powered unit on the same run. That's because the Cummins-powered rig, while hauling 7000 pounds more each trip, operates at a ton-mile cost of 1.84 mills against 3.45 mills for the gas job.

Annual Savings: $1138.80

Yearly fuel costs for a Cummins Diesel on an off-highway hauling job are $1138.80 less than the fuel costs for a unit powered by another make of diesel doing similar work. That's because the Cummins-powered unit, while making more trips and carrying heavier loads, uses 25.7 gallons of fuel per shift against 33.5 gallons per shift for the other diesel.

For a complete explanation of the Exclusive Cummins Fuel System and how it can cut your fuel bills, write Cummins Engine Company, Inc., Columbus, Ind., for Bulletin 5275.

CUMMINS ENGINE COMPANY, INC. • COLUMBUS, INDIANA

3 TIMES as the pipe

American Iron *Straight Grip* PAT. PENDING TOOL JOINTS

Results from repeated tension tests (made with the most modern machines in existence) have shown that American Iron *Straight Grip* Tool Joints are *three times* as strong as the pipe they connect! In our simplified design for these tool joints, the reduction of area on the inside seal is so controlled that the seal becomes *tighter* as the tension load and pump pressure are increased.

Field reports are now substantiating the accuracy of these tension tests . . . as well as many other laboratory tests made on these joints for torsional fatigue; stress concentration; reverse torque and thread shear. Wherever used, these *Straight Grip* Tool Joints are being acclaimed for their positive protection against such important factors as joint leakage and creep!

Simplified Field Installation and Removal

American Iron's new type portable furnace has a self-contained fuel unit. This and other newly developed equipment makes for faster, easier field installation and removal of tool joints.

AMERICAN IRON & MACHINE WORKS CO.
Oklahoma City, Oklahoma—Box 1177—Phone L. D. 518—District Office, Houston, Texas—Export Office: 420 Lexington Ave., New York City, N. Y.

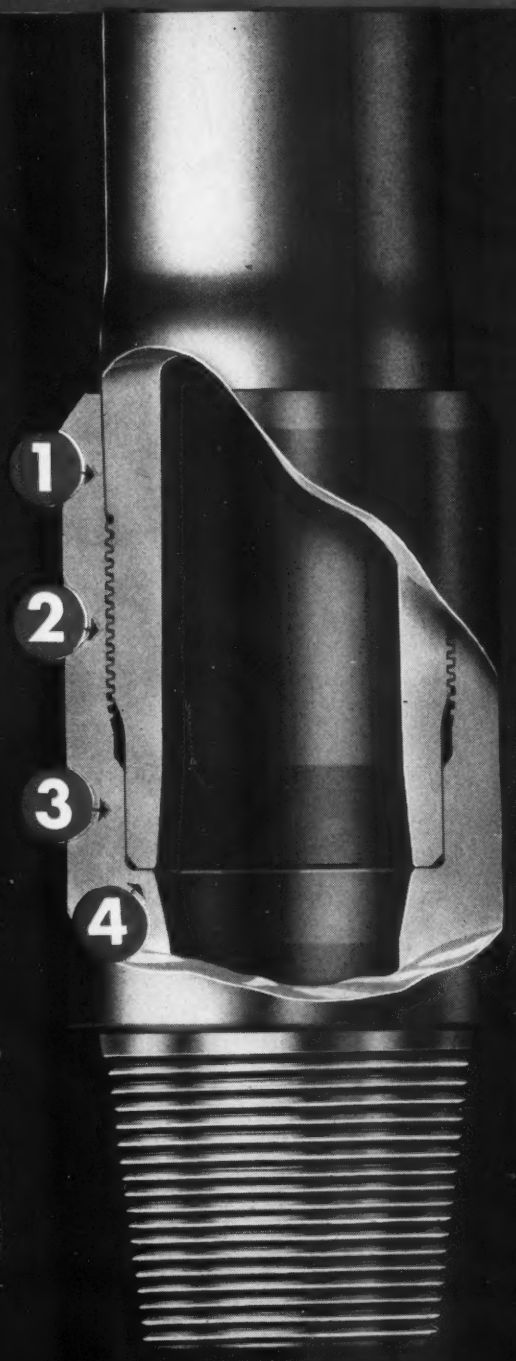
Also manufacturers of A. P. I. and "Amweld" (counterbore weld) Tool Joints

AMERICAN IRON & MACHINE WORKS CO. A OKLAHOMA CITY U.S.A.

AS STRONG they connect!

4 POINTS OF SEAL

1. **Stabilizer Seal**
2. **Thread Seal**
3. **Inside Seal**
4. **Shoulder Seal**



EXCESS WHIP ELIMINATED

Manufacturing techniques are so controlled as to assure the perfect alignment of the tool joint connection with the drill pipe, thereby eliminating excess whip in the drill string.

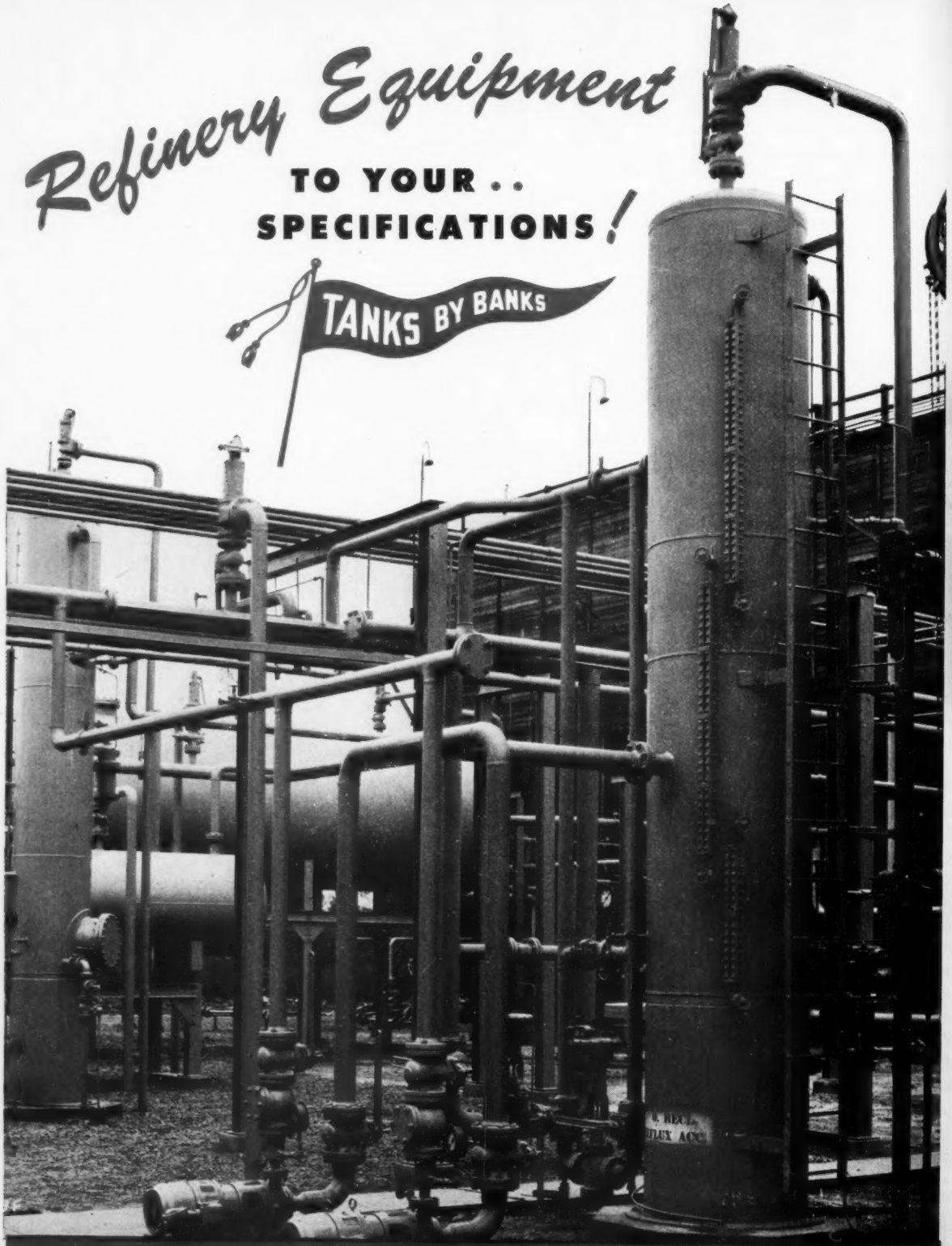
HARD METAL BANDS

Hard metal bands may be applied to our *Straight Grip* Tool Joint, before or after application to drill pipe, without jeopardizing the tool joint connection. Actually, the seals become tighter in the tool joint after application of the hard metal. It can be applied and re-applied with the assurance that the joint is still pressure tight.

Refinery Equipment

TO YOUR .. SPECIFICATIONS!

TANKS BY BANKS



DALLAS TANK COMPANY, INC.

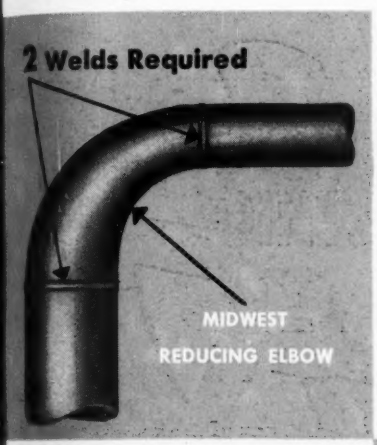
201-5 W. Commerce Street • P. O. Box 5387

DALLAS, TEXAS

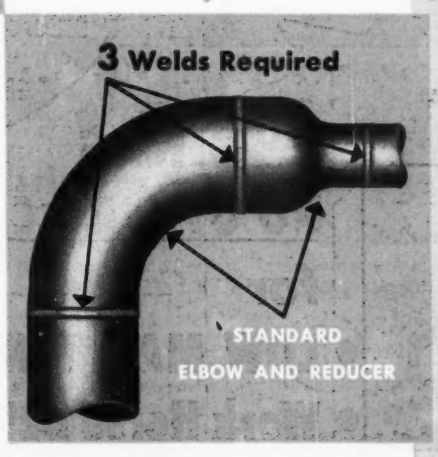
SAVE MONEY and get BETTER PIPING by using the

MIDWEST

REDUCING ELBOW



Instead of a Standard Elbow and a Reducer

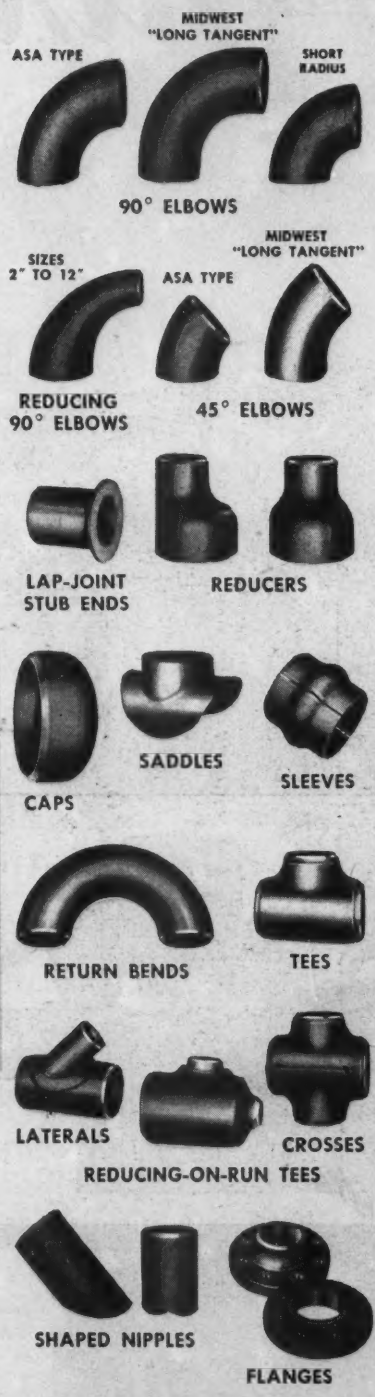


The Midwest Reducing Elbow saves more than a third of the welding when used instead of a standard elbow and reducer. In addition to a substantial saving in time and money, it provides much neater appearance and insulation is easier. The gradual reduction, smooth curve and absence of abrupt neck reduce the pressure drop and turbulence. Center-to-end dimensions are the same as for ASA standard elbows.

All the advantages of Midwest Standard Elbows are to be found in Midwest Reducing Elbows . . . unusual dimensional accuracy and uniformity, stress relieving, beneficial effect of working metal in compression, etc.

The Midwest Reducing Elbow is only one of many fittings developed by Midwest to reduce the cost and improve the quality of welded piping. You will find it advantageous to get in touch with the Midwest Distributor near you whenever you need welding fittings.

MIDWEST WELDING FITTINGS
Improve Piping Designs and Reduce Costs



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***Sales Offices:* New York (7), 30 Church St.**
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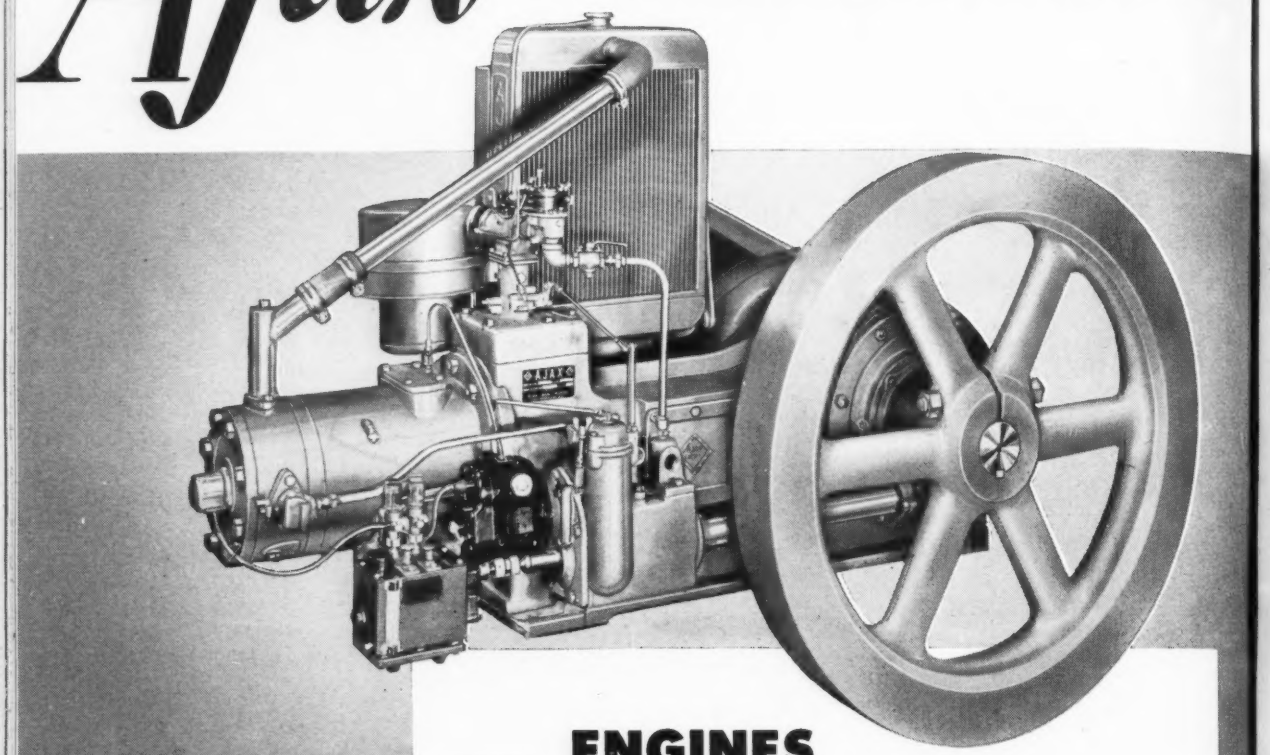
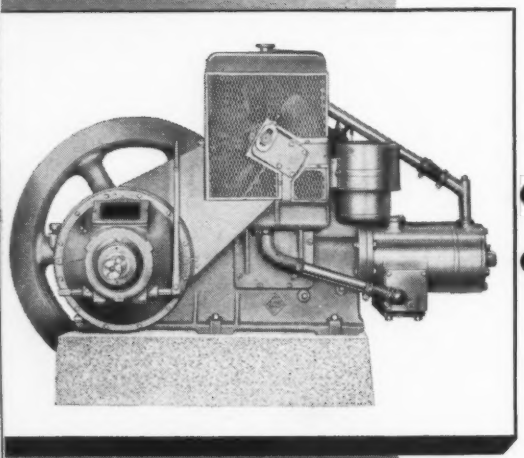
Ajax GAS and OIL ENGINES





ENGINES NO OTHERS CAN MATCH *for*

- **LOW MAINTENANCE**
- **Work Horse DEPENDABILITY**

When you need low-cost, foolproof engine performance for pumping and other continuous oilfield jobs—*pick AJAX!* Get down-to-earth AJAX reliability, with maintenance so low you never notice it. These engines *stay on the job* because that's what they're built for . . . see your Supply Man and have him show you the vital reasons-why!

AJAX ENGINES

AJAX IRON WORKS
CORRY, PENNSYLVANIA

Oil Field Distributors THE NATIONAL SUPPLY CO., TOLEDO, OHIO
R. B. MOORE SUPPLY CO., INC., BOLIVAR, N. Y. · BETHLEHEM SUPPLY CO., TULSA, OKLA.

AIRCOLITE — AIRCO SELF HARDENING — AIRCO TUNGTUBE — AIRCO TUNGSERTS — AIRCOLOY NOS. 1 & 6 — AIRCO NOS. 388, 91, 82, 53, 46 AND NICKEL MANGANESE

Special Offer

AIRCO'S NEW HARDFACING ALLOYS

. . . a trial assortment for only $2.95

Your name on the coupon below will bring you — *at a special introductory price of only $2.95* — a trial assortment of Airco's NEW line of Hardfacing Alloys.

You will receive:

1. The NEW Aircolite Hardfacing Alloy (for oxyacetylene and electric application) — especially recommended for pulverizer hammer, coke crusher rolls, and so on, subjected to severe *abrasion and medium impact.*
2. The NEW Airco Electric Self Hardening Alloy — for bucket teeth, sizing screens and similar equipment subjected to severe *impact and abrasion.*
3. Instructions for these two alloys, plus a booklet describing Airco's line of Hardfacing Alloys.

. . . and of vital importance to you — you will receive enough of these rods to see for yourself how the NEW Airco Hardfacing Alloys extend the service life and improve the operating efficiency of your equipment.

Since this special price is good for a limited time only, we suggest that you fill in and mail the coupon below — NOW! Send it to our nearest office or authorized dealer. On West Coast: Air Reduction Pacific Company. Represented Internationally by Airco Corporation (International).

Mail this coupon today for your special assortment of the New Airco Hardfacing Alloys

OG
Air Reduction
60 East 42nd Street, New York 17, N. Y.

☐ Here is my check for $2.95 — send me the special package of Airco's Hardfacing Alloys.

☐ Send me your booklet: "Airco Hardfacing Alloys" — at NO cost to me.

Firm_____

Signed By_____

Address_____

City & State_____

AIRCO **AIR REDUCTION**

Offices in All Principal Cities

Headquarters for Oxygen, Acetylene and Other Gases... Carbide... Gas Welding and Cutting Machines, Apparatus and Supplies... Arc Welders, Electrodes and Accessories

"Chained" TO DO THE JOB WITH MORSE

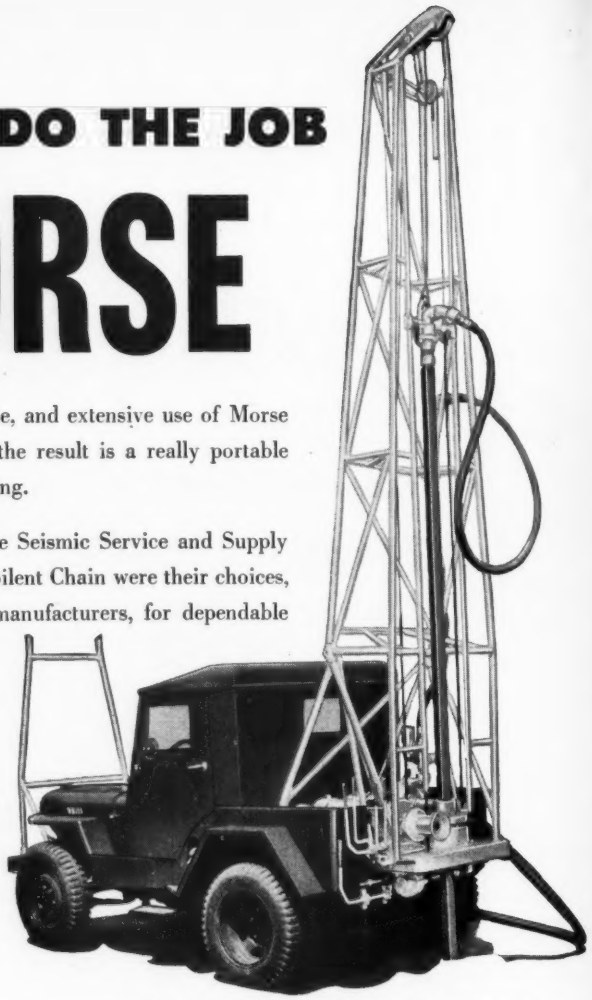
CLEVER engineering, plenty of good common sense, and extensive use of Morse Roller and Silent Chain—put them together and the result is a really portable power drill for shot hole drilling and sample boring.

This compact, rugged unit is manufactured by the Seismic Service and Supply Shop of Houston, Texas. Morse Roller Chain and Silent Chain were their choices, as they are so often with petroleum equipment manufacturers, for dependable chain drives that transmit power efficiently and smoothly in drilling operations.

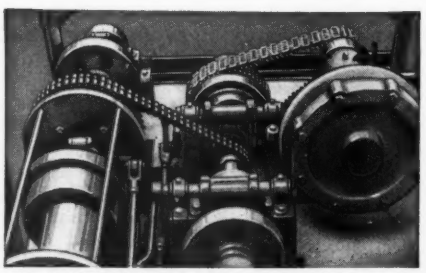
Morse Roller Chain, available in all American Standard pitches and widths, is the ideal chain drive in installations where a low-cost, positive, flexible drive is desired, and where operating conditions are rigorous. Adaptable to long or short centers, slow or relatively high speeds, Morse Roller Chain offers a choice of numerous speed ratios.

Morse Silent Chain is particularly suited for primary drives where higher speeds are encountered.

Morse Silent Chain is made to the new industry standards and therefore fits on all standard sprockets. The over-all efficiency and positive action of Morse Chain Drives have made them the design engineer's favorite method of power transmission. To be properly "chained" for any power transmission drive in the petroleum industry, use Morse Chains. Morse Chain Company, Dept. 286, Detroit 8, Mich.



Light, rugged Model "S" Drill Unit, manufactured by the Seismic Service and Supply Shop of Houston, Texas, rigged for drilling operation, an example of one of the many uses of Morse Power Transmission products in petroleum equipment.



Double ⅝" pitch Morse Roller Chain on secondary drive and hoist drive, and ½" pitch—2" wide Morse Silent Chain on the primary drive, with guard cover removed for illustration.

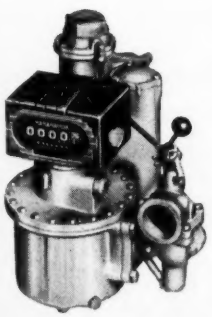
MORSE CHAIN COMPANY • DETROIT 8, MICHIGAN

BRANCH OFFICE AND WAREHOUSE, 1308 LA BRANCH, HOUSTON, TEXAS

Model L-1-D. Low (60"), yet designed for easy installation and quick adjustments. Retractor type hose (13'), completely outside. Clean lines, long-lasting finish. Computer or non-computer types.

Nationwide Service for SMITHway Gasoline Pumps

Just like the nationwide service on Smith Meters!



Thousands of users are definitely reducing costs due to faster delivery, sustained accuracy and lower maintenance of Smith Rotary Positive Displacement Meters. For years they have been giving day and night service at every step of the measurement of petroleum products. Illustrated—T-15 Truck Meter.

First, you want a dispensing unit that requires **minimum** attention. Second, you want to know that when long service does make mechanical attention necessary you will get it **immediately.** Parts and service for SMITHway gasoline pumps are available in each of the 48 states through key Smith representatives and numerous agents working under them. Add to this widespread distribution organization the inherent efficiency of these pumps **plus** the economical SMITHway Unit Replacement Plan and you can be assured that they'll be on the job for you 24 hours every day.

NOTE TO OWNERS OF NEPTUNE GASOLINE PUMPS—Smith Meter Company recently purchased the gasoline dispensing pump business of the Neptune Meter Company. Smith representatives now supply service, parts and replacement units previously furnished by Neptune.

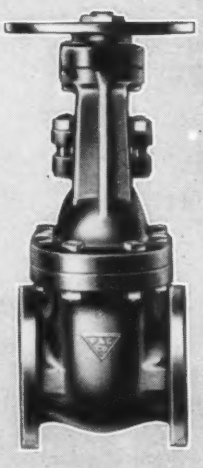
SMITH METER COMPANY

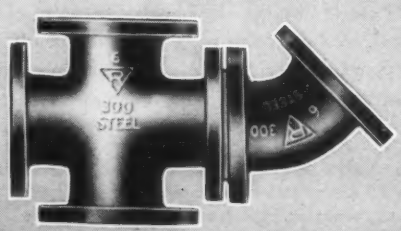
SUBSIDIARY OF A. O. SMITH CORPORATION

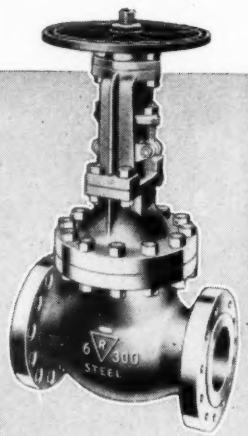
FACTORY—5743 SMITHWAY, LOS ANGELES 22, CALIF.

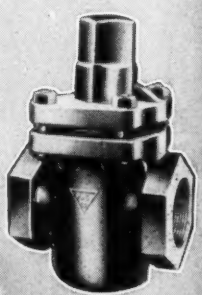
Sales Offices: NEW YORK, CHICAGO, HOUSTON, LOS ANGELES.
In Canada: TORONTO, VANCOUVER. *International Division,* MILWAUKEE 1, WISC. *Local Agents in All Principal Cities.*

"VALVE MEN" LIKE
R-P&C VALVES









Men who really know valves—know where to look for those details of design and construction that insure top performance—have a lot of respect for Reading-Pratt & Cady.

An R-P & C valve must be more than just an assembly of machined parts. It has work to do. R-P & C feels the responsibility for that work being done faithfully.

Consider your R-P & C distributor as your "valve man"—a responsible source for bronze, iron and steel gate, globe, angle and check valves—Bar Stock valves—iron cocks—Lubrotite gate valves—cast steel fittings.

ACCO

Reading, Pa. • Atlanta • Baltimore • Boston • Chicago • Denver • Detroit • Houston • New York • Philadelphia • Pittsburgh • San Francisco • Bridgeport, Conn.

READING-PRATT & CADY DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

READING-PRATT & CADY

Jones Sucker Rods for every Pumping Condition

TYPE 2

Carbon Manganese Sucker Rods. For medium to heavy pumping loads in non-corrosive fluid.

TYPE 3

Carbon Steel Sucker Rods. For light to medium loads in non-corrosive fluids.

TYPE 7

Alloy Steel Sucker Rods "The Industry's Best." For medium to heavy loads in corrosive fluid.

TYPE 12

Alloy Steel Sucker Rods. A standard size rod with added load lifting strength. Especially designed for deep or heavily loaded wells.

The Jones Field Engineering Service is experienced in suggesting recommendations that result in improved pumping efficiency—and longer trouble-free rod operation. Write for details.

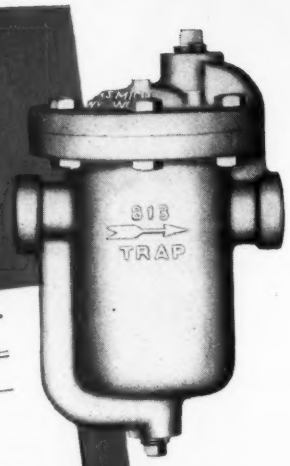
THE S. M. JONES COMPANY
(Subsidiary of Buffalo Bolt Company)
General Office and Factory: TOLEDO, OHIO
Sales Office: McBirney Building, Tulsa, Okla.
Export Sales Office: Buffalo International Corp. 50 Church Street, N. Y. C.

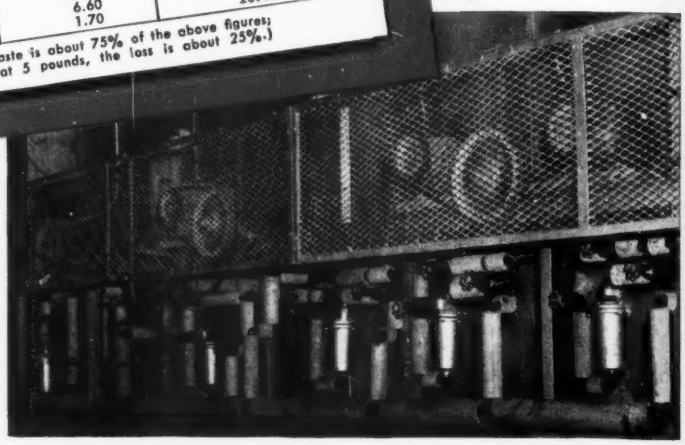
SMALL STEAM LEAKS *add up!*

Showing cost of various sized steam leaks at 100 pound pressure. (Assuming steam costs 50 cents per 1000 lbs.)

Size of Orifice	Lb. Steam Wasted Per Month	Total Cost Per Month	Total Cost Per Year
1/2"	835,000	$417.50	$5,010.00
3/8"	470,000	235.00	2,820.00
1/4"	210,000	105.00	1,260.00
1/8"	52,500	26.25	315.00
1/16"	13,200	6.60	79.20
1/32"	3,400	1.70	20.40

(For steam at 50 pounds pressure, the waste is about 75% of the above figures; at 20 pounds, it is about 50%; and at 5 pounds, the loss is about 25%.)



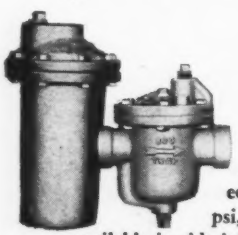


TYPICAL FUEL SAVINGS SECURED WITH ARMSTRONG TRAPS

20% FUEL SAVINGS after trapping all heating coils, individually. — Norton Greenhouses, St. Paul, Minn.

33-1/3% REDUCTION IN ANNUAL COAL BILL after installing Armstrong traps on cooking vats. — Ralph L. Smith Lumber Co., North Kansas City, Mo.

3,728 GALLONS OF FUEL OIL SAVED in one year after replacing old traps with Armstrongs on kettles, low pressure heating system and cream beaters. — Mary Lincoln Candies, Buffalo, N. Y.



STEAM SAVERS:

For trapping heating systems and process equipment from 1 to 250 psi, Armstrong Traps are available in side inlet—side outlet or bottom inlet—top outlet body styles. These compact, dependable traps provide more actual hot condensate capacity per dollar of trap investment than any other traps on the market. For selection data, capacities and prices SEND FOR the 36-page ARMSTRONG STEAM TRAP BOOK.

CHECK YOUR STEAM TRAPS *now!*

The chart above shows that a "little" steam leak can cost a lot—and a hundred or a thousand little leaks cost a lot more! No plant can afford the luxury of leaky steam traps. It costs far more to keep them than it does to replace them with modern Armstrong Inverted Bucket Steam Traps. Armstrong Traps won't leak steam because:

1. The valve and seat are ground and lapped to a precision, steam-tight fit.
2. The valve is water-sealed at all times.
3. Both the valve and seat are made of chrome steel, heat treated for long life and corrosion and erosion resistance.

With today's high fuel and operating costs Armstrong traps are priced lower in proportion to the savings they can effect than at any time in their history. Let your nearby Armstrong Representative help you select the traps you need or write direct to the factory.

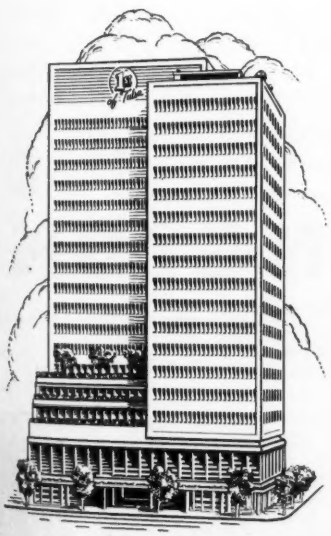
ARMSTRONG MACHINE WORKS
868 MAPLE ST., THREE RIVERS, MICH.

ARMSTRONG *Inverted Bucket* STEAM TRAPS

Factory Representatives in 48 Key Cities... Traps Stocked at 147 Points

DIRECTORS

B. F. BARNETT
Vice President
W. M. BOVAIRD
President, Bovaird Supply Company
J. P. BYRD, Jr.
Assistant to the President
F. L. DUNN
Executive Vice President
A. L. FARMER
Real Estate
ELMER HALE
President, Hale-Halsell Company
JOHN D. MAYO
President, Mayo Hotel Company
R. OTIS McCLINTOCK
President
E. H. McCULLOUGH
Vice President, Amerada Petroleum Corporation
F. B. PARRIOTT
Chairman, Sunray Oil Corporation
FRANK O. PRIOR
Vice President, Standard Oil Company (Indiana)
J. L. SHAKELY
President, Jones & Laughlin Supply Company
W. G. SKELLY
President, Skelly Oil Company
R. ELMO THOMPSON
Vice President
GARY Y. VANDEVER
Vice President, Vandever Dry Goods Company
JAY P. WALKER
President, National Tank Company
W. K. WARREN
President, Warren Petroleum Corporation



1895 — 1st of Tulsa — 1949

STATEMENT OF CONDITION

December 31, 1948

RESOURCES

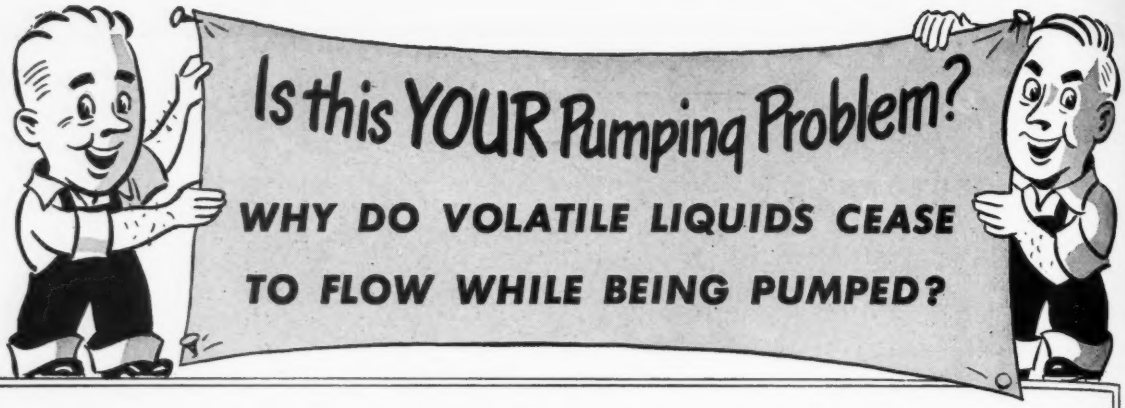
Cash and Due from Banks	$61,975,141.51	
U. S. Government Securities	70,526,670.68	$132,501,812.19
Other Bonds and Securities		6,384,958.17
Loans and Discounts		52,976,726.63
Federal Reserve Bank Stock		180,000.00
Income Earned, Not Collected		294,698.08
Bank Premises		1.00
Future Banking Quarters and Fixtures		1.00
Customers' Liability Under Letters of Credit		791,311.53
Other Resources		90,018.51
		$193,219,527.11

LIABILITIES

Deposits:	Individuals, Firms and Corporations	$137,594,299.38	
	Banks	28,712,953.26	
	U. S. War Loan Account	4,123,106.17	
	Other Public Funds	12,637,603.70	$183,067,962.51
Income Collected, Not Earned			257,488.70
Taxes, Interest and Expense—Accrued			767,576.14
Letters of Credit Outstanding			791,311.53
Capital		$2,000,000.00	
Surplus		4,000,000.00	
Undivided Profits and Reserves		2,335,188.23	8,335,188.23
			$193,219,527.11

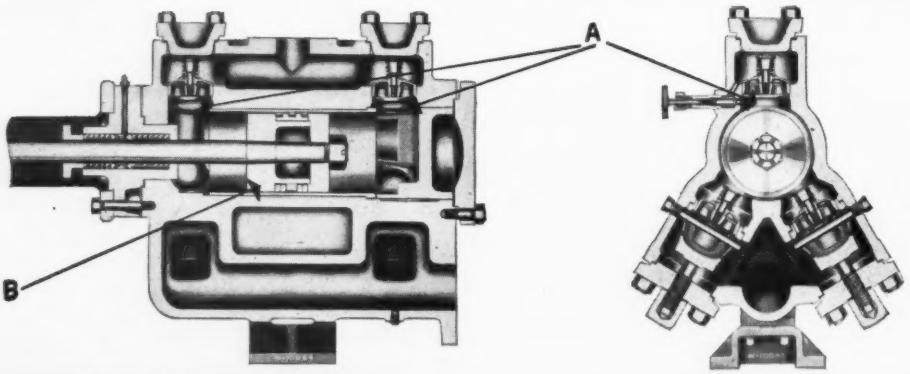
THE FIRST NATIONAL BANK AND TRUST COMPANY OF TULSA

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

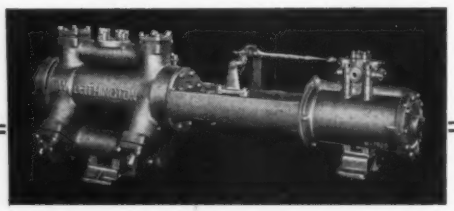


Is this YOUR Pumping Problem?

WHY DO VOLATILE LIQUIDS CEASE TO FLOW WHILE BEING PUMPED?



HiVol features for maximum volumetric efficiency in handling volatile liquids: (A) Valves placed immediately above and below cylinder bore for straight upward flow and closest clearance; (B) Extra-long liquid piston makes clearance even less.



Worthington HiVol Pumps are Horizontal Simplex Direct-Acting.

Highly volatile liquids often flash into vapor during pumping. If this vapor becomes trapped in the pump's liquid cylinder, it merely compresses and expands there, blocking the flow of liquid. But if the vapor is compressed in a small enough space, the high pressure developed will open the discharge valves and free the gas.

The closer its cylinder clearance (free space between the liquid piston, at the end of its stroke, and the suction and discharge valves) the easier it is for a pump to purge itself of entrapped gases.

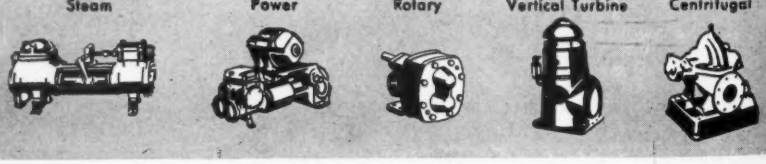
In Worthington HiVol Pumps the valves are immediately adjacent to the cylinder bore, and so arranged that flow is in the straight-upward, natural path of gases. Long connecting passageways are eliminated, while extra-long pistons further aid in providing closest possible clearance.

Many Other Advanced Features combine to make Worthington HiVol Pumps unbeatable for economical, trouble-free handling of volatile and compressible liquids. Send for Bulletin W-113-B32, with HiVol details proving *there's more worth in Worthington. Worthington Pump and Machinery Corporation, Reciprocating Pump Division, Harrison N. J.*

WORTHINGTON

P8.1

THE WORLD'S BROADEST LINE ASSURES YOU THE RIGHT PUMP FOR EVERY JOB



MANHATTAN'S NEW RAY-MAN ROTARY HOSE

Making Hole in Hog Canyon

THE NEW HOSE HAS 6 MAJOR FEATURES:

1. Is extremely flexible
2. Holds steady in the derrick—resists pulsation under pressure
3. Lasts longer because of balanced, engineered construction
4. Handles easier in moving from hole to hole with less likelihood of damage
5. Has G.O.P. Flexlastics tube for all methods of drilling, including drilling-in with oil or oil-base mud
6. New built-in coupling with "Lip-Lok" Seal

In the Ventura Avenue Field, Ventura, California, RAY-MAN Rotary Hose is showing unusual drilling performance. At the time this picture was taken making hole in Hog Canyon, they were down 12,775 feet. The hose has been in continuous use since June 12, 1947.

Pressure has been 2,000 to 2,500 pounds, but the driller reports "No difficulty whatsoever" with the new Ray-Man Rotary Hose construction and Manhattan's new Type E Built-In Leak-proof Coupling.

The Streamlined Type E Coupling embodies the new "Lip-Lok" Pressure Sealing Flange. Any tendency for pressure to escape forces the "Lip-Lok" to seal *tighter*. This makes a safer, longer lasting connection than ever before possible.

Specify Flexible RAY-MAN Rotary Hose and the Safe Type E BUILT-IN COUPLING.

RAYBESTOS-MANHATTAN INC.

Keep Ahead with Manhattan

MANHATTAN RUBBER DIVISION PASSAIC, NEW JERSEY

There is a combination of NO-OX-ID and NO-OX-IDized Wrapper for every soil condition. The high dielectric strength of the combination effectively insulates the pipe.

Speedy Labor Saving Way

TO PROTECT YOUR PIPE AGAINST CORROSION

In addition to the speed with which NO-OX-ID can be applied, it offers sure and certain long-time protection against pitting and corrosion. For over 25 years, NO-OX-ID and NO-OX-IDized Wrappers which are impregnated with NO-OX-ID have been used to protect the pipe lines of America.

If the pipe is new, NO-OX-ID and NO-OX-IDized Wrappers can be applied at the mill or pipe yard. If the line is to be reconditioned, work can be done out in the field. The ultimate result is the same . . . all moisture is sealed out; all underfilm corrosion inhibited.

Method of Application

NO-OX-ID can be applied hot or cold; by hand, traveling, or stationary machine. NO-OX-IDized Wrappers prevent soil attachment; resist shearing action.

Where Work Is Done

Since the application can be made on location or in the pipe yard, you can adopt the method best suited to your needs and your available labor.

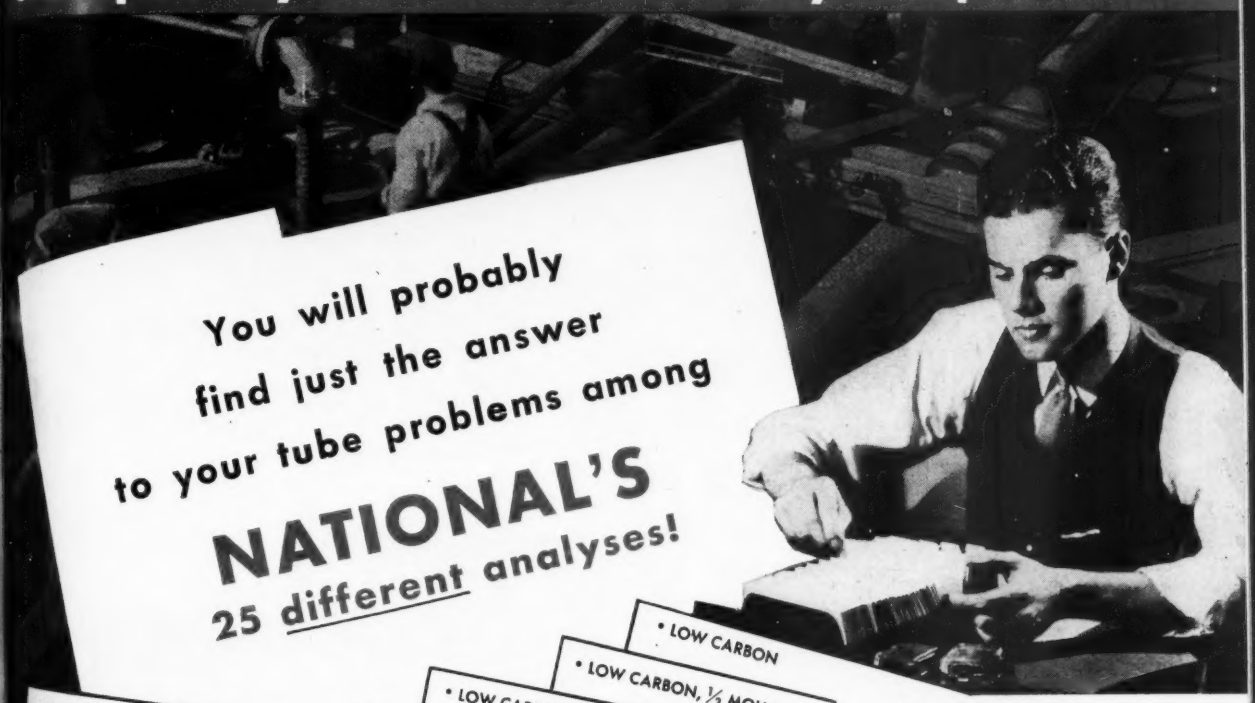
Coating and wrapping machines applying NO-OX-ID and NO-OX-IDized Wrapper to new transmission lines in the field where pipe is laid.

NO-OX-ID
IRON + OX = RUST
REG. TRADEMARK
AUG. 27, 1918

The ORIGINAL RUST PREVENTIVE

Dearborn Chemical Company
Dept. K, 310 S. Michigan Ave., Chicago 4, Ill.
New York • Los Angeles • Toronto

stumped by tube selection at your plant?



You will probably find just the answer to your tube problems among

NATIONAL'S 25 different analyses!

- LOW CARBON
- LOW CARBON, ½ MOLY.
- LOW CARBON, 1 MOLY.
- ½ CR., ½ MOLY.
- 1-¼ CR., ½ MOLY.
- 2-¼ CR., 1 MOLY.
- 2 CR., ½ MOLY.
- 2 CR., ½ MOLY., 1-¼ SIL.
- 2-½ CR., ½ MOLY., ¾ SIL.
- 3 CR., ½ MOLY., 1-¼ SIL.
- 3 CR., 1 MOLY.
- 5 CR., ½ MOLY., 1-½ SIL.
- 5 CR., ½ MOLY.
- 5 CR., ½ MOLY., TITANIUM
- 5 CR., ½ MOLY., COLUMBIUM
- 7 CR., ½ MOLY.
- 8 CR., 1 MOLY.
- 9 CR., 1 MOLY.
- 12 CR., ALUMINUM
- 17 CR.
- 18-8
- 18-8 TITANIUM
- 18-8 COLUMBIUM
- 18-8 MOLYBDENUM
- 25-20

FOR STILL TUBES • CONDENSER TUBES
HEAT EXCHANGER TUBES • REFINERY PIPING

HERE at NATIONAL—the world's largest producer of tubular products — we have gathered a vast amount of interesting information on the performance of various steel analyses under practically every conceivable condition.

Much of this data comes from experiments and tests in our own modern laboratories. Additional volumes of it were accumulated through the close and constant observation of the experiences of refineries throughout the country with varying conditions of temperature, pressure, corrosion, and exposure.

Out of all this research and study have come important developments in tubing steel which enable NATIONAL to now offer you Seamless Still Tubes, Condenser Tubes, Heat Exchanger Tubes, and Refinery Piping in 25 different analyses. Each of these 25 different analyses has been performance-proved to meet the specific conditions of corrosion and oxidation for which it is recommended.

Yes, bring your problems to NATIONAL. No other company is better equipped to help you solve them. NATIONAL's Staff of Tubing Specialists will work closely with your own engineers to see that you get just the right tubes and piping for your particular requirements.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.
(TUBING SPECIALITIES DIVISION)
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

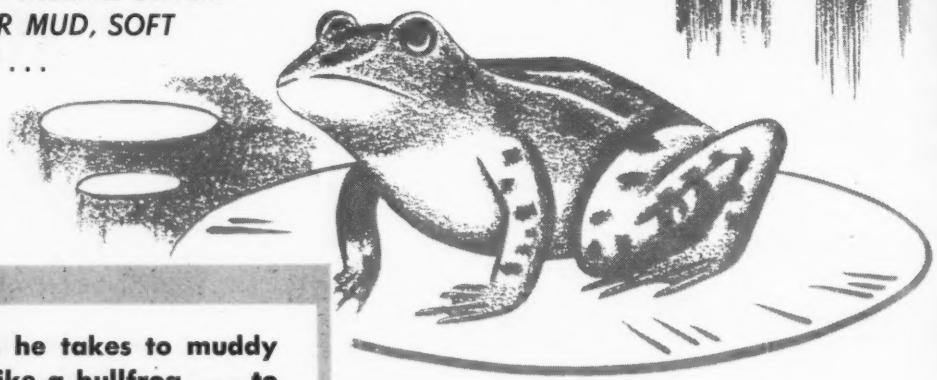
WALLS WITHOUT WELDS

USS

NATIONAL SEAMLESS PIPE AND TUBES

UNITED STATES STEEL

SURE I'M AS AMPHIBIOUS AS A FROG . . . I CAN "NAVIGATE" THAT DISMAL SWAMPLAND . . . OR MUD, SOFT DIRT, SAND . . .



Osh says he takes to muddy country like a bullfrog . . . to desert sand like a horned toad . . . Oshkosh trucks get through regardless of the kind of terrain.

OSHKOSH *all* WHEEL DRIVE

Oshkosh All Wheel Drive Trucks are designed specifically for oil field needs — drilling, servicing, hauling... Power is applied where the traction counts . . . Hydraulic power steer makes steering easy in sand, soft dirt, and mud . . . Maximum maneuverability results.

Write For Literature .....

Mid-Continent Representatives

GARDNER-PRICE COMPANY
Wright Building
Tulsa, Okla.

If you're all "gummed up"

in a tough heat transfer problem

Specify..

Vogt Spiral, Spring Type Scraper
Patent No. 2,117,175

Vogt

SCRAPER TYPE CHILLERS

Photos show shop assembly without driving motor.

Fouling of the inner pipe surfaces of Vogt Chillers is eliminated, because they are swept clean continuously during operation by patented spiral, spring type scrapers. And these clean surfaces achieve the highest possible rate of heat transfer between the solution and the refrigerant.

VOGT DOUBLE PIPE TYPE CHILLERS are designed to use ammonia, brine, or cold dewaxed oil as the cooling medium. Oil or brine, when employed, is circulated through the jacket pipes countercurrent to the flow of the solution in the inner pipes.

MULTI-PIPE TYPE CHILLERS, for direct expansion, have large jacket shells each containing seven inner pipe sections and employ volatile refrigerants such as ammonia, freon, propane, etc.

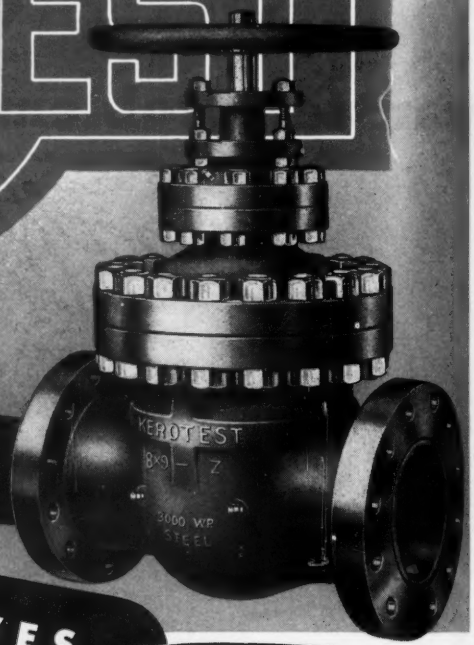
Our engineering staff is qualified by training and experience to help you find the right answers to your heat transfer problems. Their recommendations are available without obligation.

HENRY VOGT MACHINE CO.
INCORPORATED
LOUISVILLE 10, KENTUCKY
BRANCH OFFICES: NEW YORK, PHILADELPHIA, CLEVELAND, CHICAGO, ST. LOUIS, DALLAS

KEROTEST

PRECISION ENGINEERED
Cast Steel

FLOW LINE and
DRILLING VALVES



KEROTEST developed the *first* cast steel gate valve adopted by the oil industry and today, more than ever, offers you the latest developments in precision-engineered cast steel valves for every oil field need. KEROTEST Valves meet every requirement from the day you spud-in . . . to production . . . to distribution manifold . . . pipe line . . . and refinery. Call in your local Kerotest engineer on your *next* operation.

KEROTEST MANUFACTURING CO.
PITTSBURGH 22, PA.

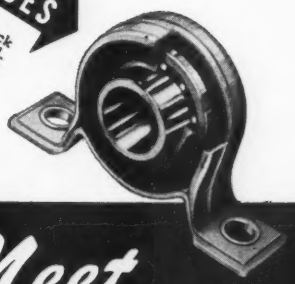
CHICAGO HOUSTON LOS ANGELES NEW YORK ODESSA
PITTSBURGH SAN FRANCISCO
Casper, Wyo. Charleston, W. Va. Richmond, Va. St. Louis, Mo.
Toledo, Ohio Tulsa, Okla.

KEROTEST

America's First Name in Quality Valves . . . .

TYPE SES

Ball bearing unit pillow block—assembled and lubricated. Rubber-mounted for quiet operation.



TYPE SUS

Self-aligning ball bearing unit pillow block—with ring seals to exclude dirt.

Meet THE SKF FAMILY OF PILLOW BLOCKS

TYPE SUA

Self-aligning ball bearing unit pillow block, adapter mounting. Furnished assembled and lubricated, ready for easy installation. Ring seals exclude dirt. TYPE SUAR—Same pillow block equipped with spherical roller bearings.

TYPE SAF

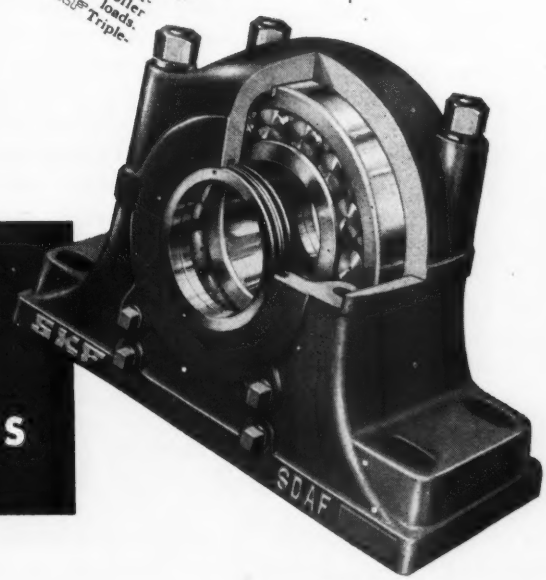
Supplied with either self-aligning ball bearings or spherical roller bearings with adapter mounting. Bearings protected with SKF Triple-Seal rings. TYPE SA—Same unit using felt seals.

How often are you confronted with the question, "Shall we use a ball or roller bearing pillow block?" The SKF line can handle ALL jobs—the BIG jobs, the *little* jobs, the in-between jobs—with pillow blocks equipped with either ball or roller bearings to handle the known loads, speeds and operating conditions of *your* job. Authorized SKF Distributors carry pillow blocks in stock. Send for Catalog 280, second edition. 6452

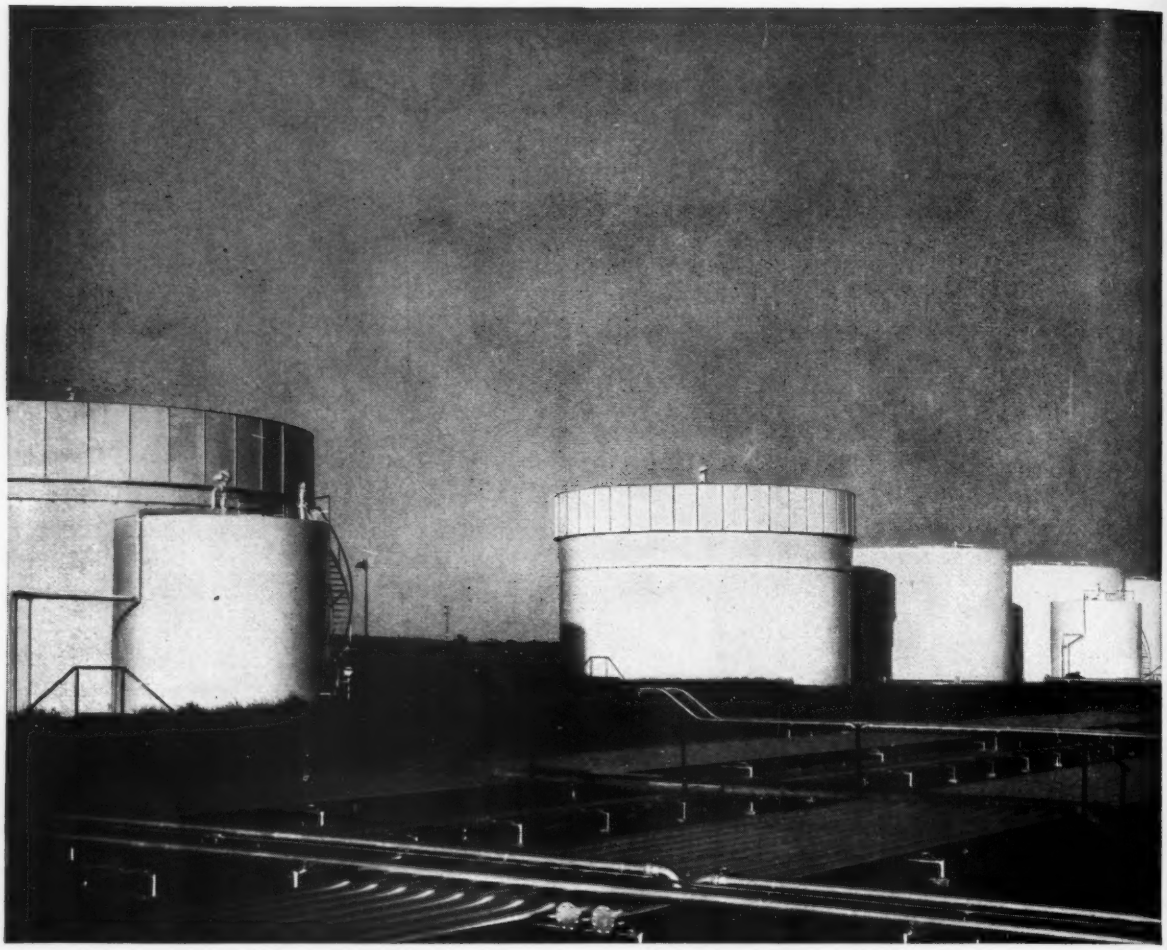
SKF INDUSTRIES, INC., PHILA. 32, PA.

TYPE SDAF

Exceptionally heavy and rugged pillow block with self-aligning spherical roller bearings for severe loads. Equipped with SKF Triple-Seal rings.



SKF PILLOW BLOCKS



BALANCING ACT FOR HYDROCARBONS

When the volume pumped in exceeds the volume pumped out, there's danger of losing the most valuable part of your gasoline...the lighter fractions that mean superior performance in modern, high compression engines. The Expansion Roof Tank, either alone or manifolded to several cone roof tanks, acts as a balancing agent between the input and output rates and, in normal terminal operation, eliminates the possibility of filling losses.

This complete or near-complete elimination of filling losses is in addition to the absolute prevention of loss through standing or breathing. The Expansion Roof provides far more than the maximum volume required by vapor expansion due to temperature increases.

Available in a wide range of expansion capacities, the Expansion Roof is suited to most single or multiple tank storage facilities for production, refining, or marketing.

You'll find it profitable to investigate this balancing act for hydrocarbons when you plan increased storage equipment.

FABRICATED PLATE DIVISION

GRAVER TANK & MFG. CO., INC.

East Chicago, Indiana

Graver offers a complete service to the petroleum industry including Expansion Roof Tanks, Floating Roof Tanks and pressure vessels. In addition, Graver is prepared to furnish specialized steel plate work such as fractionating columns and class one vessels as well as stainless and alloy fabrication; water conditioning equipment of all types; and through the Graver Construction Co., is prepared to handle all types of petroleum and chemical construction work.

GRAVER

NEW YORK • PHILADELPHIA • CHICAGO • CATASAUQUA, PA. • HOUSTON • SAND SPRINGS, OKLA.

SPANG CABLE TOOLS and SPANG PACKERS

aid modern drilling in All Fields

Spang Cable Tools and Spang Packers have been developed in the belief that the best equipment and the best maintenance result in the most economical drilling. Spang Tools, built for rugged service, are known and preferred the world over. They are available through leading supply companies and field shops everywhere.

Your Favorite Supply Dealer
recommends and sells

SPANG CABLE TOOLS

D312—Swivel Rope Socket
D322—Weldless Jar
D328—Drilling Stem
D330—Stem Pin
D335—Stem Box
D360—Straight Drilling Bit
D368—Twisted Drilling Bit
D380—Regular Bailer
F460—Center Rope Spear
F467—Three-Prong Grab
F476—Solid Bored Friction Socket
F481—Multi-Slip Collar Socket
F482—Full-Circle 3-Slip Slip Socket
F515—Reversible Casing Ripper
P124—Deep-Hole Special Bottom-Hole Packer
P131—Screw-Release Casing-Anchor Packer

THE HIGHER STANDARD

SPANG & CO.
BUTLER, PA.

The Higher Standard

Dependability YOU CAN TAKE FOR GRANTED

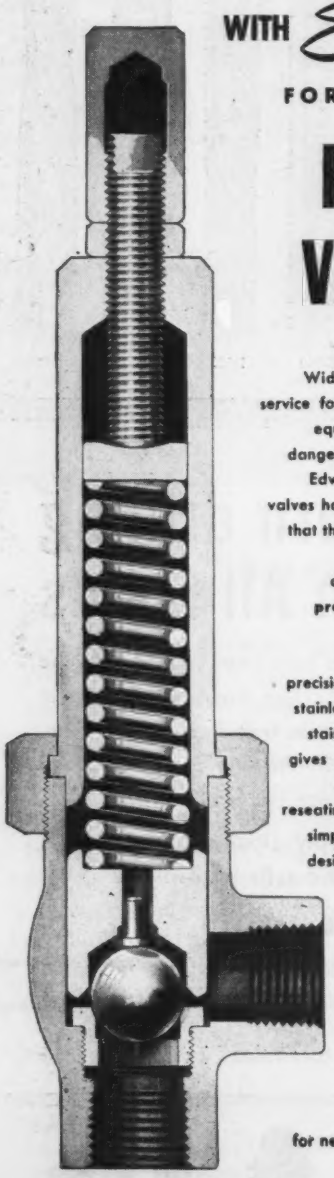
PROTECT

EQUIPMENT AGAINST DANGEROUS PRESSURE INCREASES

WITH *Edward*

FORGED STEEL

RELIEF VALVES



Widely used in all types of service for protecting plant and equipment against sudden dangerous pressure increases, Edward forged steel relief valves have repeatedly proved that they will always perform their relieving action dependably and at the pressure for which they are set.

Seat and ball disk are precision machined of EValloy stainless steel. The hardened stainless steel bearing plug gives point contact with the disk for quick and tight reseating after operation. The simple, foolproof functional design and accurate spring action assure positive relieving action. Every valve is factory-set for the required relieving pressure. For full information send coupon for new Edward Relief Valve Bulletin No. 711.

PREVENT

DAMAGE TO VITAL INSTRUMENTS BY USING

Edward STRAINERS

Traps, pumps, valves, pressure and temperature regulators and gages will operate more efficiently and last far longer when Edward forged steel strainers remove grit, scale and other foreign matter from pipe lines. They are easy as possible to clean. Working parts are as few as possible:

1. Forged steel body with streamlined inner contours for free flow and minimum pressure drop.
2. Rust proof monel metal perforated screen built to withstand severe abrasive service, precision-fitted to prevent leakage of foreign matter.
3. Steel union ring and bonnet make tight connection with body and hold screen firmly in place. Drain plug easily removed to clean out accumulated matter.

For steam, oil or vapor service up to 600 lb at 850 F or for hydraulic service up to 1440 lb, Edward strainers may be installed in either horizontal or vertical lines. Write for new Bulletin No. 712 on Edward strainers.

Edward Valves, Inc.

Subsidiary of Rockwell Manufacturing Co., East Chicago, Indiana

EDWARD VALVES, Inc.
1492 West 145th Street, East Chicago, Ind.

Please send me the new bulletins on Edward strainers ☐, relief valves ☐.

Name_____

Company_____

Street_____

City_____ Zone____ State_____

Get Action LIKE THIS:

★ **24 hours to make and install coils in 250 HP motor**

★ **Rebuilt 250 HP slip ring motor in 2½ days**

★ **3 days to rebuild 125 HP motor including 200 miles of truck shipment**

THESE ARE ACTUAL JOBS turned out by Giles Armature and Electric Works, Marion, Illinois . . . the kind A-C Certified Service Shops are doing every day!

When every hour costs money . . . when production is stopped . . . Allis-Chalmers Certified Service on motors, transformers, pumps, etc., can get you rolling again, *fast*. Dependable for prompt service on routine work, too.

Call Your A-C Office or Dealer. A-C Certified Service Shops are hand-picked, independent repair shops meeting rigid standards for equipment, trained personnel and business reputation for square dealing. For the one nearest you, ask your Allis-Chalmers Dealer or District Office.

Check with us for *new* motors too. Stock or quick delivery on many sizes, types.

Texrope and *Vari-Pitch* are Allis-Chalmers trademarks. A 2594

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and District Offices throughout the country.

MOTORS — ½ to 25,000 HP and up. Matching Allis-Chalmers Control.

TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

PUMPS — Integral motor and coupled types. Sizes and ratings to 2500 GPM.

ALLIS-CHALMERS, 1059A SO. 70 ST.
MILWAUKEE, WIS.

ALLIS-CHALMERS

Economics of ALLEGHENY METAL

Research Results: Especially in acid or salt atmospheres (industrial or coastal areas) Stainless Steel Guy Wire is far better and cheaper than any other type. First cost, installed, is 20% above Material B and 40% above Material C (two commonly-used coated wires) but Allegheny Metal Guy Wire outlasts either of these materials many times over. The very first time that "B" or "C" must be replaced—and this may be necessary as often as every three to five years—Allegheny Metal saves 40% in costs over "B" and 30% over "C"... Plus 40% less weight to handle, transport and store . . . Plus greater reliability, maximum protection against chafing and impact, and decades of re-use.

Memo: **To anyone who uses GUY WIRE on poles, stacks, towers, signs, buildings, etc., ALLEGHENY METAL is best and cheapest in the long run . . . why not investigate it?**

Complete technical and fabricating data—engineering help, too—yours for the asking.

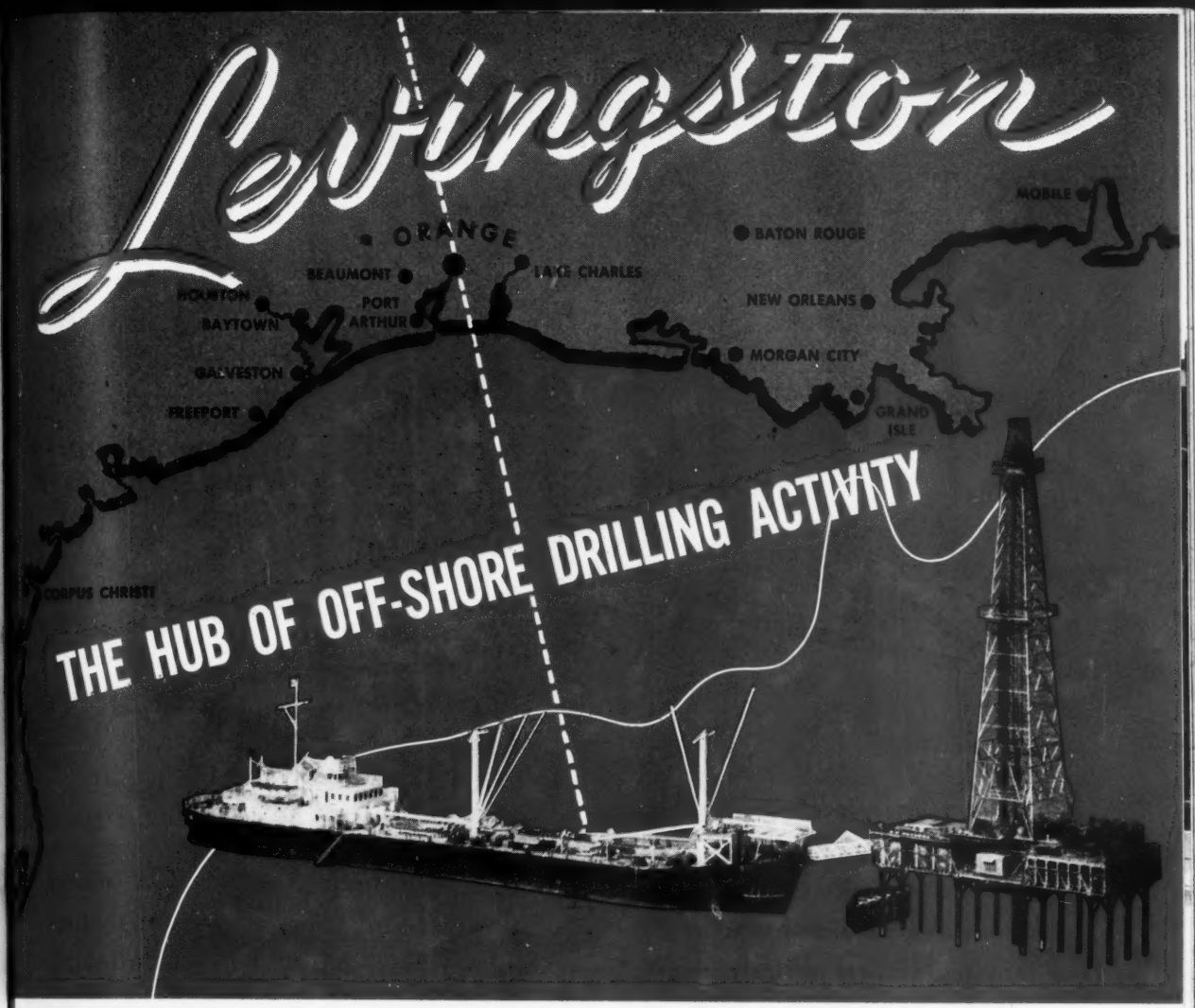
ALLEGHENY LUDLUM STEEL CORPORATION

The Nation's Leading Producer of Stainless Steel in All Forms

Pittsburgh, Penna. . . . Offices in Principal Cities

Allegheny Metal is stocked by all Jos. T. Ryerson & Son, Inc., Warehouses

Levingston



Right in the "front yard" of Levingston's extensive shipbuilding facilities, the oil industry is making history.

Situated squarely in the center of this history-making off-shore drilling activity, Levingston . . . pioneer of numerous innovations in submersible drill barges . . . was the first to convert naval vessels for distant off-shore drilling tenders.

In step with the rapidly expanding off-shore operations, Levingston has maintained a rigid policy of continuously expanded marine facilities and "know-how" to offer the oil industry the best and most modern marine ways, dry-docks and marine engineering skill.

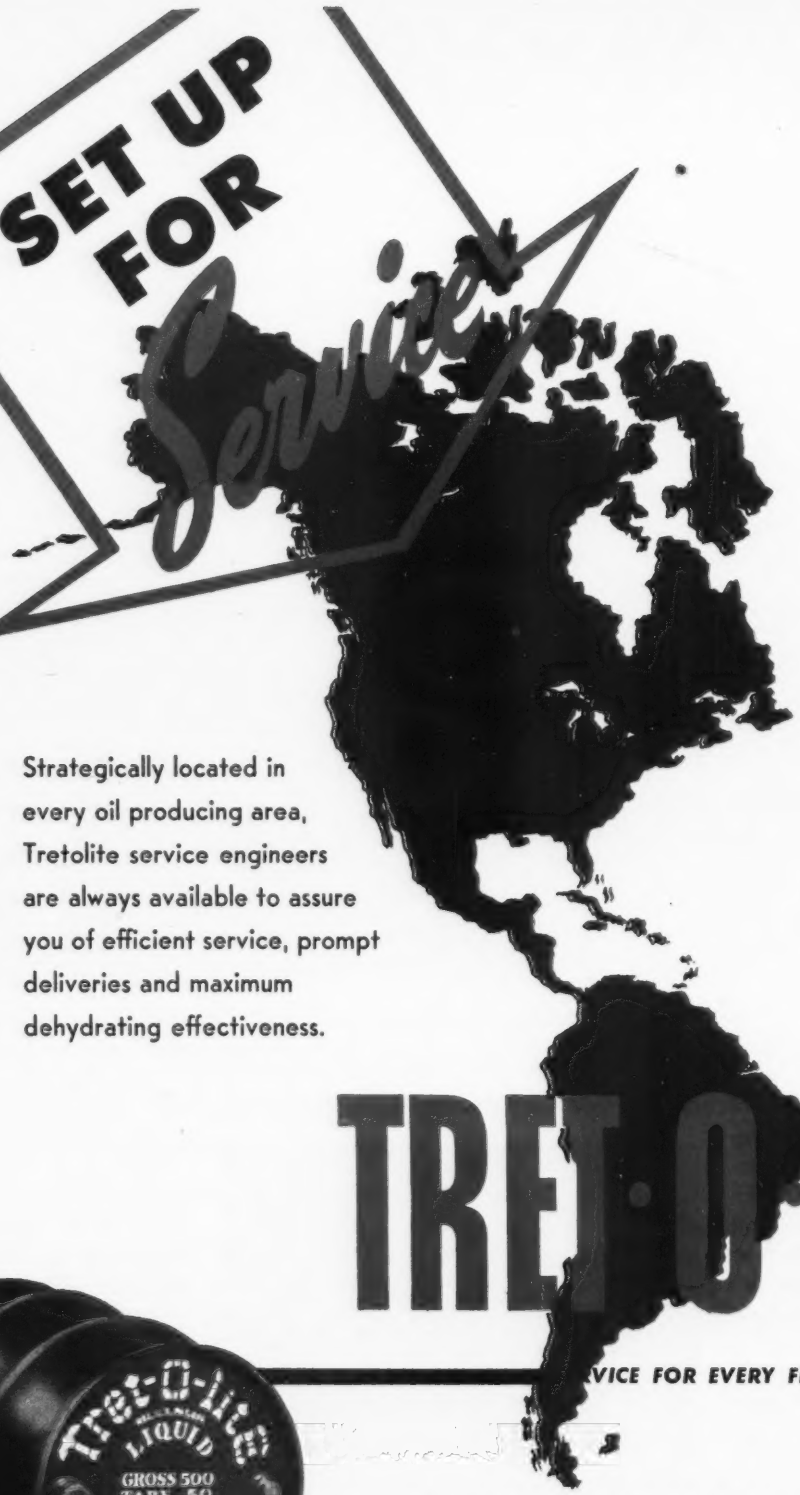
Levingston builds and services every type of vessel required for modern marine drilling. Operators planning off-shore tests are invited to investigate the sound engineering and economy of Levingston, headquarters for marine drilling equipment.

LOOKING DOWN on Levingston—For more than two decades, Levingston has specialized in construction and repair of tugs and barges. This storehouse of experience has stood Levingston in good stead to service oil industry marine needs.

Levingston

SHIPBUILDING COMPANY • ORANGE, TEXAS

SET UP FOR *Service*



Strategically located in every oil producing area, Tretolite service engineers are always available to assure you of efficient service, prompt deliveries and maximum dehydrating effectiveness.

TRET-O-LITE

RVICE FOR EVERY FIELD

TRETOLITE COMPANY

Manufacturing Chemists

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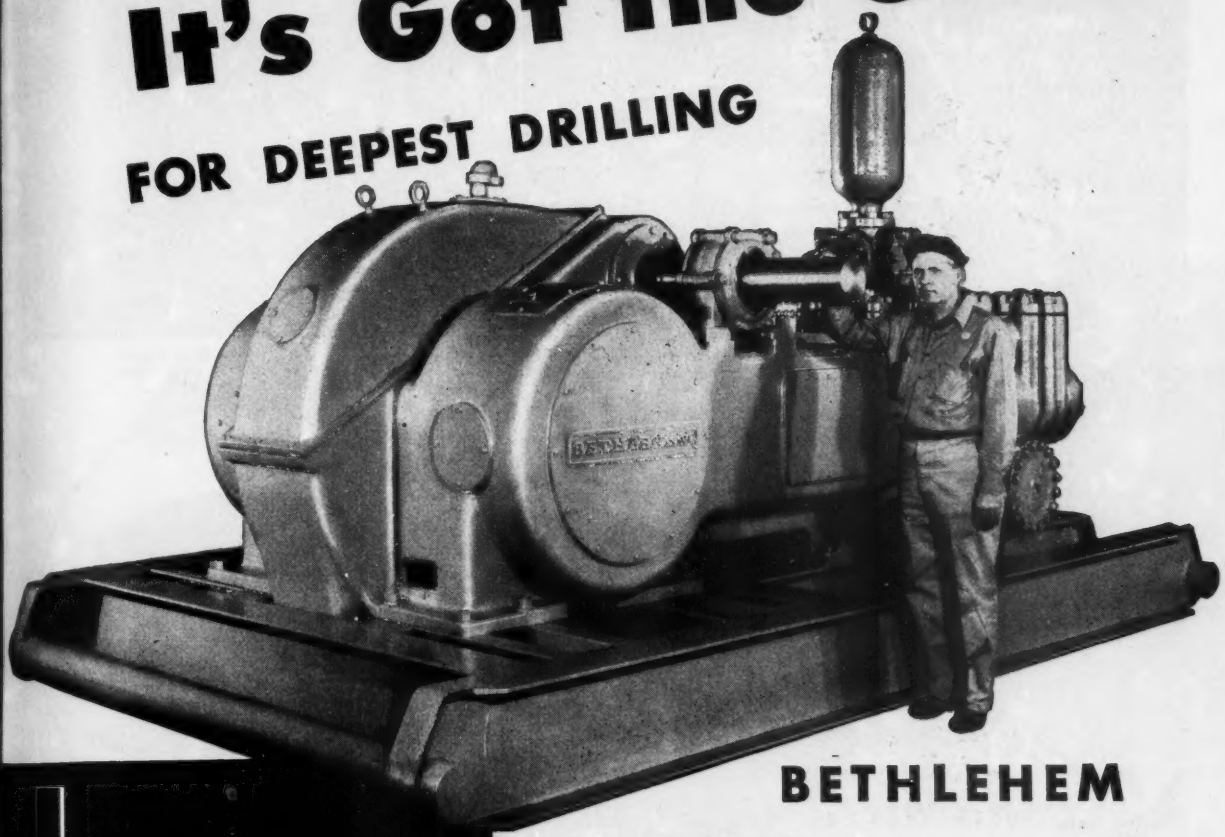
DEHYDRATING DESALTING

T-49-1

3 YEARS' PROOF...

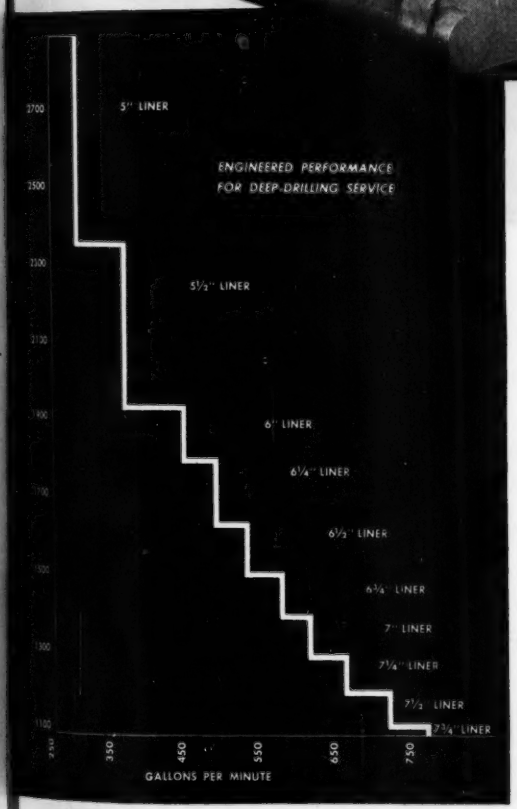
It's Got the Guts

FOR DEEPEST DRILLING



BETHLEHEM

G-600 POWER PUMP



A 600-HORSE PUSH

Maintains high circulation rates 'way down the hole

Lessens bit expense

Cuts down drilling time

Eliminates dangerous compounding

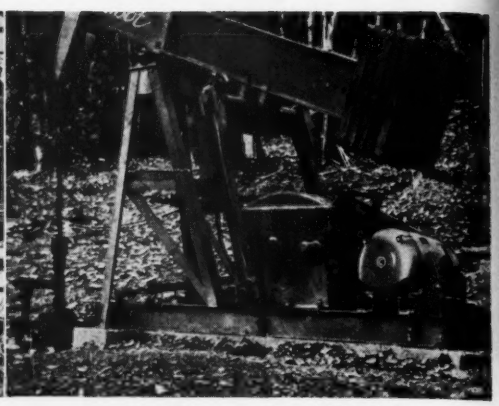
BETHLEHEM SUPPLY COMPANY

General Offices: 21 E. Second St., Tulsa, Okla.

SUBSIDIARY OF BETHLEHEM STEEL CORPORATION

BETHLEHEM STEEL

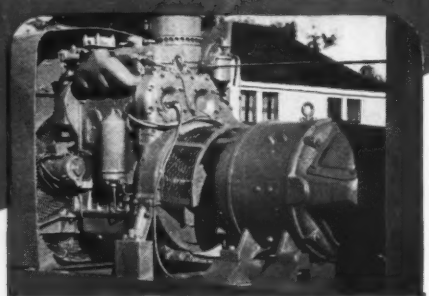
Three Century 2 horsepower direct current motors driving mud screens.



Century 5 horsepower Type SCT splash-proof three phase squirrel cage motor operating an oil well pump jack.

Century Oil Field MOTORS

Assure Continuous, Economical Operation



Century 30 KW direct current generator mounted with a gas engine drive for oil field power.

Century splashproof oil field motors are scientifically designed to resist the hazards of outdoor installation. They keep falling solids, as well as dripping and splashing liquids, out of the vital parts of the motor — assure dependable operation in all kinds of weather.

Century Type SCT three phase squirrel cage pumping unit motors save wear and tear on equipment. Their "high slip" permits the motor to slow down as the load comes on — thus cushioning the impact of the peak load and reducing the sudden shock to both motor and equipment.

Specify Century motors for all your electric power requirements. You can get complete information at your regular supply store.

Popular sizes and standard ratings are generally available from factory and branch office stocks.

Century GENERATORS

Where public service current is not available, Century Generators will provide adequate, continuous electric power. Depending on the load per motor and the size of generator, from 10 to 30 wells can be operated from one generator. They provide a dependable source of oilfield power.

-611

Century C MOTORS

CENTURY ELECTRIC COMPANY
1806 Pine Street, Saint Louis 3, Missouri
Offices and Stock Points in Principal Cities

RIG UP FASTER

On barge, piling or land installations, Emsco "J" rigs require a minimum of set-up time. Exclusive "stair-step" design permits placing of engines, compounding transmission and selective speed transmission at any desired level. Rig may be flat set, medium-step or full stair step to meet varying height substructures.

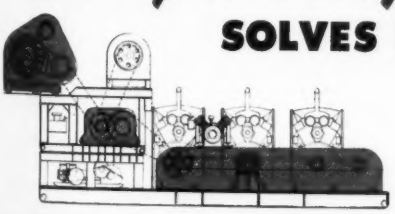
DRILL MORE EFFICIENTLY

Unlimited operating flexibility . . . that's the key to the deep drilling efficiency of Emsco "J" rigs. These rigs may be powered by two, three or four engines of a wide variety of types and makes. Two slush pumps may be driven at different speeds simultaneously.

TRANSPORT EASIER

Emsco "J" rigs consist of three basic packages—drawworks, selective speed transmission and compounding transmission. All units meet road clearance requirements. "Stair-step" design eliminates need of heavy bulky subbases under engines and compounding transmission. Hauling weight is substantially reduced.

Packaged Design OF EMSCO "J" RIGS SOLVES DEEP DRILLING PROBLEMS



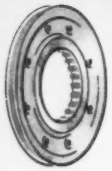
EMSCO "J" SERIES drilling Rigs consist of three basic units—drawworks, selective speed transmission and compounding transmission. This "packaged design" has increased the efficiency of every phase of the drilling operation, from the original rigging-up to the final tear down and move to another location. Long "V" belt and chain drives are eliminated. Rig requires a minimum of set-up time. Completely air-operated controls centralized at the driller's position speed up drilling operations. Rig design permits use of any or all of the following accessories: sand reel; hydromatic or dynamatic brakes; washdown pump; any type of feed-off device; generators; and compressors.

For rigs engineered to the drilling needs of today and tomorrow, talk to your nearest Emsco representative. He will show you how Emsco "J" rigs can lower your deep drilling costs.

CONTINENTAL

THE CONTINENTAL SUPPLY COMPANY

General Offices: DALLAS, TEXAS • Export Division: 30 Rockefeller Plaza, NEW YORK, N. Y. • Representatives: ARGENTINA • BOLIVIA • CHILE • COLOMBIA • ENGLAND • MEXICO • PERU • TRINIDAD • VENEZUELA

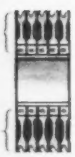


Large diameter alloy steel sheaves reduce bending stresses in line. Sheaves and bearings are interchangeable between crown and traveling blocks. Available with 50 or 60 inch sheaves.

Flame-hardened grooves maintain ideal sheave groove contour minimizing wire line wear. Field reports show that mating M-Series Crown and Traveling Blocks increase wire line life by 40% or more.

Large number of straight roller bearings running in 27½" O.D. race provide maximum load capacity per unit of width. Built-in thrust shoulders reduce width of block and eliminate use of hazardous thrust washers.

Lines are perfectly parallel between mating crown and traveling blocks. This minimizes lateral chaffing of line. Large diameter roller bearings assure freely rotating sheaves and fast dropping empty blocks.

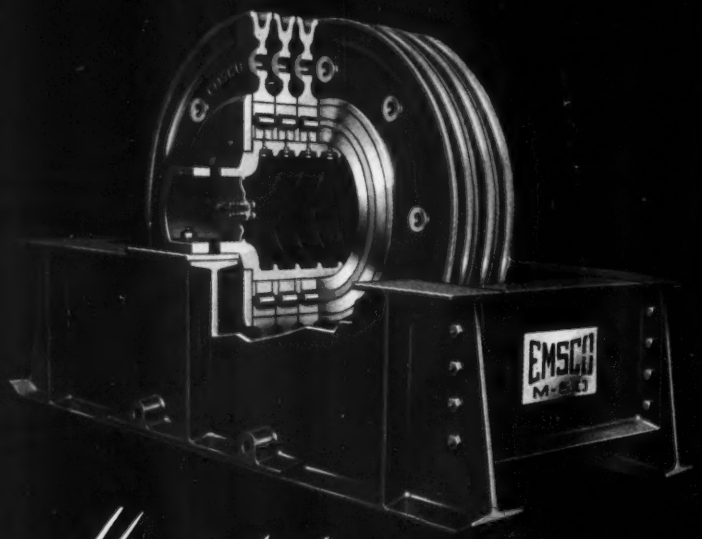


Close proximity of bearings to rope grooves prevent tilting of block and minimize wear on wire line, bearings and sheaves. Many operators report that Emsco M-Series blocks more than pay for themselves in reduced wire line service costs.

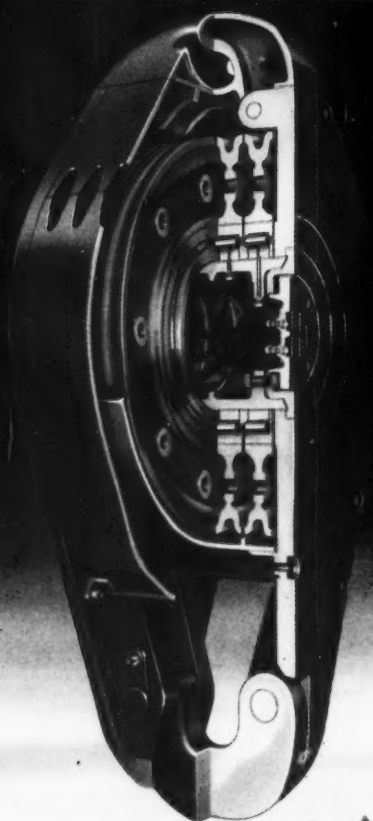
Ask your nearest Emsco representative to show you how Emsco M-Series Crown and Traveling Blocks can lower your deep drilling costs. New bulletin available upon letterhead request.

EMSCO

REG. U.S. PAT. OFF.



Here's Why YOU GET LONGER WIRE LINE LIFE WITH EMSCO M-SERIES CROWN & TRAVELING BLOCKS



EMSCO DERRICK & EQUIPMENT COMPANY

Houston, Texas . LOS ANGELES, CALIFORNIA . Dallas, Texas

DISTRIBUTOR:

Mid-Continent: THE CONTINENTAL SUPPLY COMPANY, Dallas, Texas

Export: THE CONTINENTAL SUPPLY COMPANY, INC., New York, N. Y.

"PACEMAKERS IN OIL FIELD EQUIPMENT DESIGN

"Life/cost ratio of superheater coil vastly improved since switching to Sicromo No. 5 steel," reports W. C. Hardesty Company

CONTINUOUS operation at 1200° F. was raising hob with the superheater coil at W. C. Hardesty Company, Dover, Ohio. The red hot temperatures were weakening the steel. Too frequent replacements were necessary and valuable hours of production time were being lost.

Learning of the problem, metallurgists of The Timken Roller Bearing Company suggested that the coil be made out of Sicromo No. 5—a special analysis Timken high temperature steel. So while the manufacturer was having a new furnace installed he decided to put in a new Sicromo coil, too. The results were amazing.

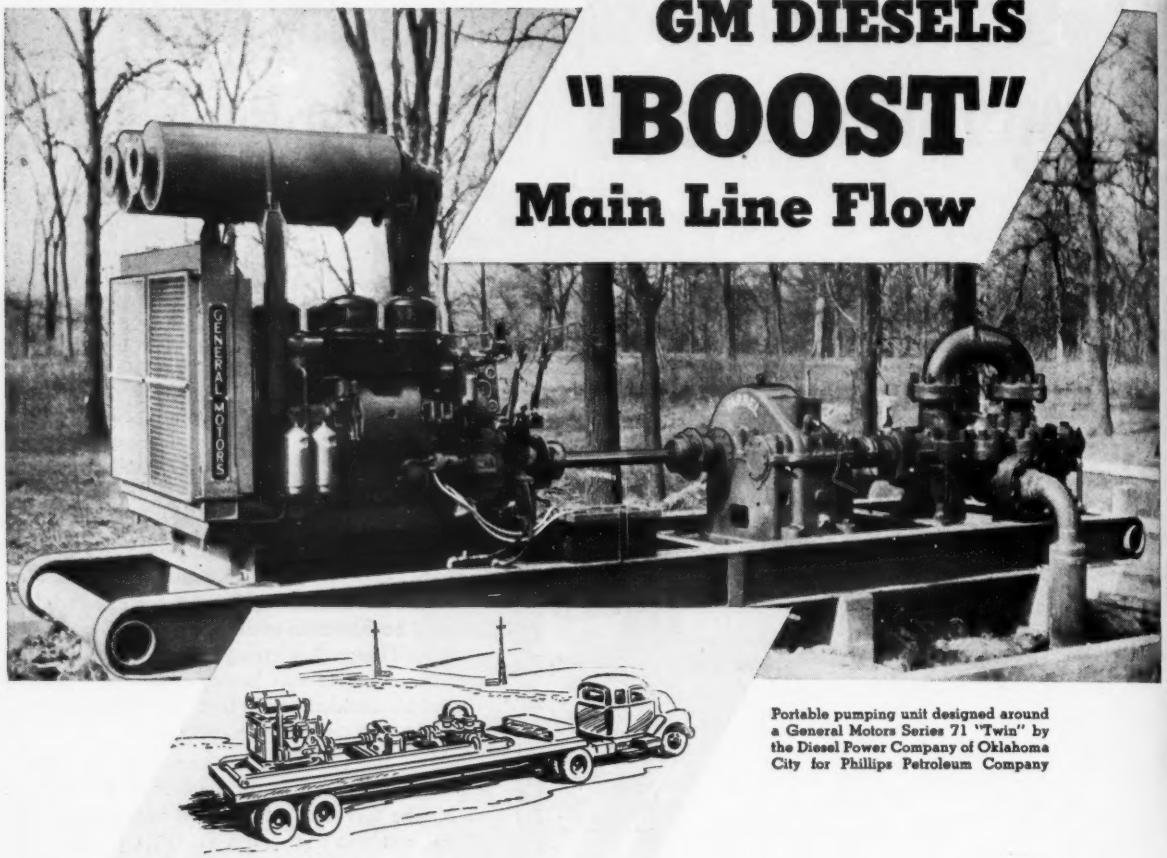
Where the grade formerly used had to be replaced every year, the Sicromo tubing stood up under the terrific heat *for seven years* before replacement was necessary. Valuable production time was saved. And less money was spent for tubing—thanks to Timken's ability to specify the high temperature steel that delivers the *best* life/cost ratio for each particular application.

Why not let the metallurgists of the Timken Company analyze *your* high temperature tube problems? With 19 years of experience and research, plus a wide selection of Timken fine alloy steels at their disposal, they can recommend the steel that will do your job most efficiently. No obligation. Write The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

Specialists in alloy steel—including hot rolled and cold finished alloy steel bars—a complete range of stainless, graphitic and standard tool analyses—and alloy and stainless seamless steel tubing

GM DIESELS "BOOST" Main Line Flow



Portable pumping unit designed around a General Motors Series 71 "Twin" by the Diesel Power Company of Oklahoma City for Phillips Petroleum Company

TO step up the flow of petroleum products in its 8-inch main line between St. Louis and Chicago, Phillips Petroleum Company has installed three of these completely portable pumping units.

A General Motors Series 71 Diesel "Twin 6," delivering 260 rugged continuous horsepower, drives a 4-stage centrifugal pump at 3600 r.p.m. through a speed increaser. Throughput is 32,000 barrels per day at 365 p.s.i. differential pressure.

GM Diesels were chosen for this work because their compact 2-cycle design—power at every downstroke—makes them quick starting, smooth and dependable in operation and unusually powerful for their modest size and weight.

In fact, the entire pumping unit weighs less than 14,000 pounds—can be easily picked up and moved by truck for emergency installation anywhere on the line. No elaborate foundation is necessary.

For complete details of this sturdy, money-making, easy-to-maintain power, consult your GM Diesel distributor listed below or drop us a line.

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES...Up to 200 H.P. DETROIT 28, MICHIGAN MULTIPLE UNITS Up to 800 H.P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

GENERAL MOTORS CORP., DIESEL ENGINE SALES, PETROLEUM INDUSTRY, 1504 Philtower Bldg., TULSA 3, OKLAHOMA

Anderson-O'Brien Co. LOS ANGELES 21, CALIFORNIA

George Engine Co. NEW ORLEANS 18, LA.

Western Machinery & Engine Co. ST. LOUIS 10, MISSOURI

Diesel Power Co. OKLAHOMA CITY, OKLAHOMA

Empire Oil Field Machinery Co. ODESSA, TEXAS

United Tool & Valve Repair Co. SHREVEPORT, LOUISIANA

Seitz Machinery Company Inc. BILLINGS, MONTANA

Stewart & Stevenson Services Inc. HOUSTON 11, TEXAS

Gehring Equipment Co. CASPER, WYOMING

ADVANTAGES OF RAYMOND CONCRETE PILES NO. 5

saving in construction cost

OTHER ADVANTAGES: Uniform Bearing Capacity • Greater Carrying Capacity • Permanency • Engineered for the Job • Complete Satisfaction

Eleven Raymond rigs in operation on one job—an example of Raymond's ability to speed the work.

Genuine economy depends on many basic factors and is not always evidenced by the lowest bid.

Whether your job is large or small, you will find Raymond economy is the result of:

1. Sound engineering and planning.
2. Experienced supervision.
3. Equipment readily available anywhere in the country.
4. Experience in purchasing materials at lowest costs from sources nearest the job.

...All demonstrated by world-wide experience . . . your assurance of genuine economy.

52 YEARS FOUNDED 1897 OF PROGRESS

THE SCOPE OF RAYMOND'S ACTIVITIES includes every recognized type of foundation construction—concrete, composite, precast, steel, pipe and wood piles. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements and borings for soil investigation.

RAYMOND

CONCRETE PILE CO.

Branch Offices in Principal Cities of United States and Latin America

140 CEDAR STREET • NEW YORK 6, N. Y.

THE ALL NEW

CLARK IDECO

Flo-Master

TRIPLEX MUD PUMPS

Modifications from end-to-end make the All New *Flo-Master* TRIPLEX the most advanced slush pump in the field . . . inboard bearing supports for the unique crankshaft that combines crank-throw and eccentric construction—individual valve pots for intake and discharge—replaceable cast iron shoes and guides on the crossheads . . . Plus All-Steel Construction from end-to-end.

Flo-Master Triplex Slush Pumps are designed for today's severe requirements . . . to deliver steadier volumes of mud under higher pressures for deepest drilling . . . and to provide this smooth power with reduced vibration and shock on the prime movers, drives, and the whole hydraulic circulating system.

Today's drilling requirements demand more hydraulic power with minimum weight. *Flo-Master* Triplex Pumps supply that demand . . . more smoothly, more economically, more dependably. Get the complete story today from any sales office of the suppliers listed on the following page.

T-440

successor t
the origina
Clark Triplex P

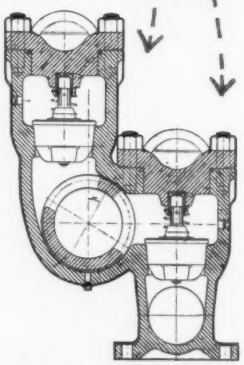
194 original pump
in service
the world ov

T-880

the world's m
powerful
slush pump

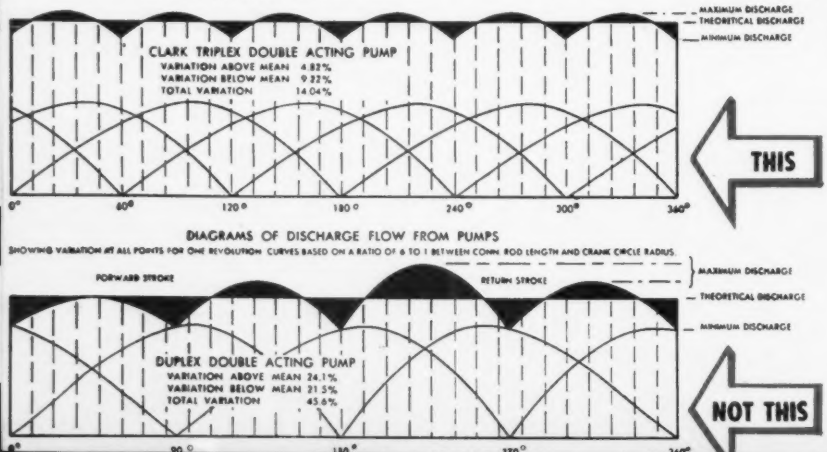
new fluid end

SEPARATE VALVE POTS FOR INTAKE AND DISCHARGE



- **Triplex Action means 2/3 less variation in discharge pressure**
- **All-Steel Construction for maximum horsepower with minimum weight.**
- **Triplex Action for smoother output . . . longer life.**
- **One third less weight per horsepower.**

HERE'S WHY TRIPLEX ACTION MEANS 2/3 LESS VARIATION IN DISCHARGE PRESSURE


MAXIMUM DISCHARGE
THEORETICAL DISCHARGE
MINIMUM DISCHARGE
CLARK TRIPLEX DOUBLE ACTING PUMP
VARIATION ABOVE MEAN 4.82%
VARIATION BELOW MEAN 9.22%
TOTAL VARIATION 14.04%
0° 60° 120° 180° 240° 300° 360°
THIS
DIAGRAMS OF DISCHARGE FLOW FROM PUMPS
SHOWING VARIATION AT ALL POINTS FOR ONE REVOLUTION CURVES BASED ON A RATIO OF 6 TO 1 BETWEEN CONN ROD LENGTH AND CRANK CIRCLE RADIUS.
FORWARD STROKE
RETURN STROKE
MAXIMUM DISCHARGE
THEORETICAL DISCHARGE
MINIMUM DISCHARGE
DUPLEX DOUBLE ACTING PUMP
VARIATION ABOVE MEAN 24.1%
VARIATION BELOW MEAN 21.5%
TOTAL VARIATION 45.6%
0° 90° 180° 270° 360°
NOT THIS

CONDENSED CAPACITY CHART

T-440

Liner Size	7¼"	7"	6½"	6"	5½"	5"
Max. Dis. Pres., Psi.	800	863	1000	1190	1445	1785
Gal. per min.	797	740	635	533	440	357

Pump Speed, 65 R.P.M.; Input, 440 H.P.; Hydraulic, 370 H.P.

T-880

Liner Size	7½"	7"	6½"	6"
Max. Dis. Pres., Psi.	1320	1400	1650	1960
Gal. per min.	1056	912	778	654

Pump Speed, 65 R.P.M.; Input, 880 H.P.; Hydraulic, 750

THREE double-acting pistons . . . two, smooths out pumping impul . . . produces two-thirds less variation . . . charge pressures . . . reduces shock . . . wear on the entire mechanical and . . . draulic system.

Conventional duplex pump produces . . . than three times as wide variation . . . charge pressure . . . creates irregu . . . sations affecting smoothness of . . . eration as well as pump output.

IMPROVED POWER END

Showing the power end of the 440 HP Triplex Pump with the wide faced herringbone gear driving the crankshaft.

POWER END

Showing the power end of the 880 HP Triplex Pump with the two opposed helical gears that drive the crankshaft.

CLARK STEEL Triplex

IDECO

ONE OF THE DRESSER INDUSTRIES

Contact your nearest supplier of CLARK-IDECO Pumps and secure full details on the outstanding all-new Triplex Slush Pumps. Write for Bulletin TP-48.

INTERNATIONAL DERRICK & EQUIPMENT CO.

MACHINERY AND EXPORT SALES HEADQUARTERS, DALLAS 1, TEXAS

EXPORT OFFICES

DALLAS • NEW YORK • TORRANCE • BUCHAREST • BUENOS AIRES
CARACAS • LONDON • RIO DE JANEIRO

TRIBUTOR HEADQUARTERS

AMERICAN PIPE AND SUPPLY CO., CASPER . . . . . THE BOVAIRD SUPPLY CO., TULSA
HOWARD SUPPLY COMPANY, LOS ANGELES . . . INTERNATIONAL DERRICK & EQUIPMENT CO., DALLAS . MID-CONTINENT SUPPLY COMPANY, FORT WORTH . REPUBLIC SUPPLY COMPANY, HOUSTO

WHY YOU GET *Extra Wear*

FROM A PATTERSON-BALLAGH SWAB

Abrasion Resistant Swab Rubber

...the secret of the long wearing quality of Patterson-Ballagh Deep Well Swabs is in the sensitive, abrasion resistant swab rubbers and the standard high quality balls and reversible seats.

Long skilled in the compounding of special rubber for oil field use, Patterson-Ballagh has developed a swab rubber that gives the Swab a sensitive feel, yet allows it to pull a full load of fluid every trip with a *minimum of wear.* These swab rubbers really cut swabbing costs.

The entire weight of the fluid being lifted rests not only on the swab rubber, but also on the cage, ball and seat. To eliminate the possibility of fluid slippage, a standard ball and reversible seat combination, like those found in deep well plunger pumps, is used exclusively and may be replaced in the field. A standard, streamlined plunger pump cage is also used.

In addition to providing extra wear at the rubbers and valve, Patterson-Ballagh Casing, Tubing and Drill Pipe Swabs have the fast dropping characteristics found only in swabs with a large, streamlined internal diameter. The possibility of the swab being blown out of the hole is minimized. So for fast, safe swabbing with a swab that gives you EXTRA WEAR, call your Patterson-Ballagh man.

Standard Cages, Balls and Seats Replaceable Anywhere

PATTERSON-BALLAGH OIL FIELD SPECIALTIES — SEAL OF QUALITY

Specify

PATTERSON-BALLAGH

DIVISION OF BYRON JACKSON CO.

DEEP WELL SWABS

MAIN OFFICE: 1900 EAST 65TH STREET, LOS ANGELES, CALIFORNIA

6247 Navigation Bldg., Houston 11, Tex. • 808 Graybar Bldg., New York 17, N.Y. • 330 Russ Bldg., San Francisco 4, Calif.
T.I.P.S.A., Santiago Del Estero 286, Buenos Aires, Argentina • H. F. Towler, 9 Cavendish Square, London W1, England

"Wherever there are pipeline projects there are 'Caterpillar' Diesels"

YES, a "Caterpillar" Diesel laying pipe with a Trackson Pipe Layer is as natural as a hen laying eggs . . . there just doesn't seem to be any better way.

The Latex Construction Co., one of the largest contractors in the business, owns a fleet of *forty-eight* of these handy huskies, with sidebooms and bulldozers designed and matched to work with them at top efficiency.

The pictures show a few details of a Latex operation—laying a 20-inch pipe between Beaumont and Houston for the Texas Pipeline Company.

Said an old-timer on pipeline construction: "'Caterpillar' Diesels have everything it takes for putting pipe in fast, right and profitably. For clearing right of way to powering ditchers, to moving material, to stabbing, cradling and laying pipe, to backfilling and cleaning up, you can count on these dependable machines staying on the job till it's done—twenty-four hours a day if necessary."

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

In this new casing head . . . with 19 different interchangeable combinations of suspension and seal . . .

Cameron

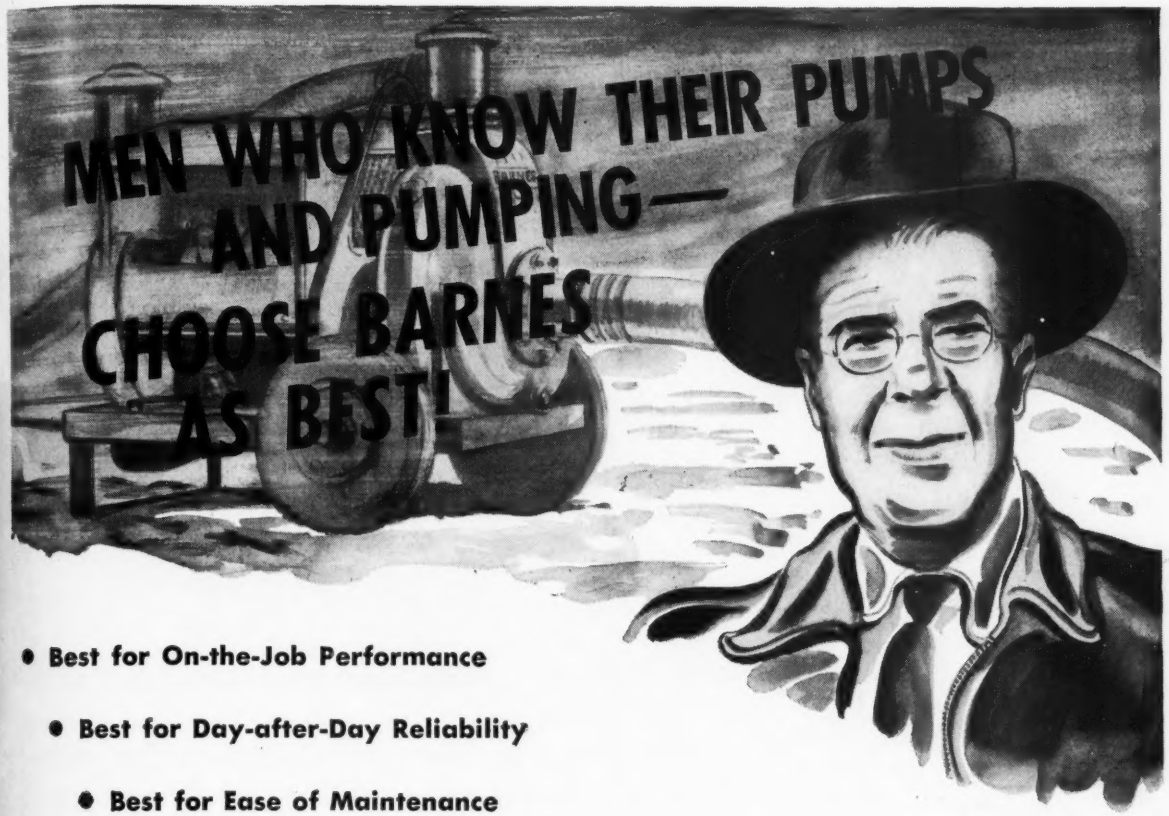
AGAIN SELECTS *Murray Rubber* FOR THE SEAL

CAMERON . . . oil industry pioneer in the use of molded rubber seals for pressure control equipment . . . again offers oil producers an improved type casing head. And, again, Murray engineers collaborated with Cameron engineers in developing the oil and acid resisting rubber component for this unique casing head, just as we have done on practically all Cameron rubber requirements for many years.

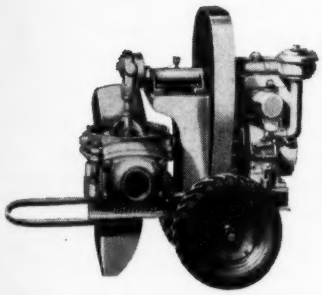
Murray provides the facilities of the South's largest and most modern mechanical rubber manufacturing plant, *plus* a complete machine shop for producing customer's molds, inserts, dies and fixtures. Bring *your* rubber molding problems to Murray.

MURRAY RUBBER COMPANY
HOUSTON, TEXAS

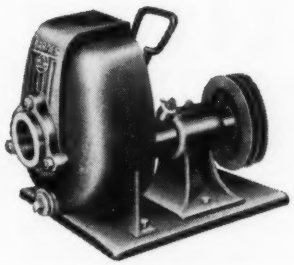
Murray Rubber



- **Best for On-the-Job Performance**
- **Best for Day-after-Day Reliability**
- **Best for Ease of Maintenance**
- **Best for Lower Operating Costs**
- **Best for Delivering the Most in Gallon Output**



Lift-and-Force Single Diaphragm Pump
Lighter in Weight, 300 lbs. More Compact for Faster Handling. Simplified Design for Easier Servicing.



Barnes Universal Drive Pumps
Driven from Power Take-Offs of Tractors, Existing Gas or Diesel Engines Directly Coupled to Electric Motors.

Barnes "33,000 for 1" Automatic Centrifugal Pumps
'Pumps 33,000 gallons of liquid for only 1 gallon of gas. Capacities from 3,000 to 90,000 G.P.H.

Buy the Best... Buy Barnes

BARNES MANUFACTURING CO.
MANSFIELD, OHIO

MAIL THE COUPON TODAY

Barnes Manufacturing Co.
611 North Main Street
Mansfield, Ohio

Please send me descriptive literature on pumps marked below:

.....Gasoline-engine driven automatic centrifugals
.....Universal-belt driven automatic centrifugals
.....Diaphragm Pumps

Name .....
Firm .....
Address .....
City ..... *State* .....

An Oliver "Cletrac" with side boom hard at work taking up 16-inch pipe. 51 miles of 16-inch and 6 miles of 12-inch pipe were taken up from Drumright to Seminole.

WITH OLIVER "Cletrac" !

Handling long strings of pipe is easy with an Oliver "Cletrac" crawler tractor. The "straight-line" travel of these husky tractors is made-to-order for pipe line work. Regardless of the side drag of side-mounted equipment and side loads, they travel straight ahead . . . eliminate waste motion . . . save time and fuel.

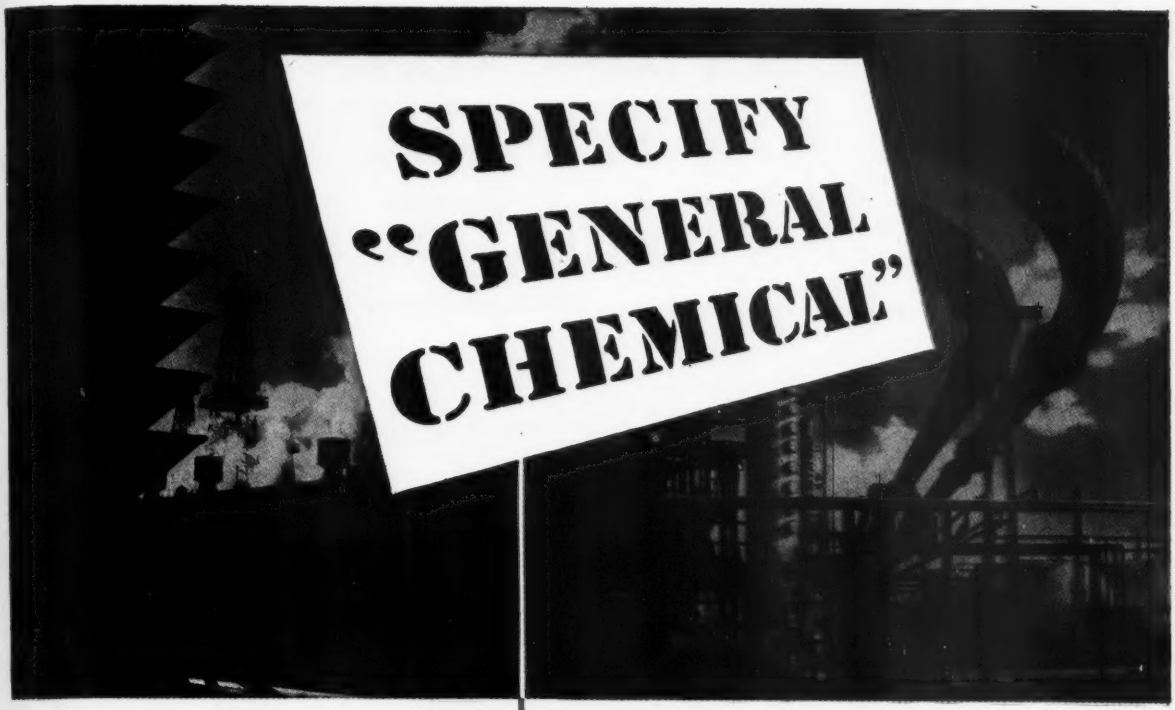
It's the exclusive Oliver "Cletrac" steering principle that gives you this important *plus* advantage. One track can be speeded up . . . the other slowed down to compensate for the side pull of the boom and load of pipe. The wasteful zigzag required by the ordinary tractor when a heavy side pull is present is eliminated. An Oliver "Cletrac" can travel parallel to and well away from the trench to minimize the danger of cave-ins.

For pipe lining, for clearing right-of-ways, for road building, preparing river crossings, back-filling, hauling equipment around the rigs, an Oliver "Cletrac" is the oil field favorite. Your Oliver "Cletrac" dealer will be glad to give you the complete story. The OLIVER Corporation, Industrial Division: 19300 Euclid Ave., Cleveland 17, Ohio.

Cletrac
a product of
The OLIVER Corporation
A complete line of Crawler and Industrial Wheel Tractors

"THE SIGN OF EXTRA SERVICE"

OLIVER Cletrac SALES SERVICE



SULFURIC ACID

Standard Grade: 66° Baume (93.19% H_2SO_4); 99% H_2SO_4

Other Grades: Diamond, 66° Baume
Crystal (low in iron) 66° Baume

OLEUM

15, 20, and 65% free SO_3

Specify These General Chemical Products, Too

Alkylation: Sulfuric Acid, Anhydrous Hydrofluoric Acid

Polymerization: Fluosulfonic Acid, Boron Fluoride, Etherate

Sulfonation: Sulfuric Acid, Oleum, Sodium Sulfate, Anhydrous

Isomerization: Muriatic Acid

Oil Well Acidizing: Muriatic Acid, Fluoboric Acid, Hydrofluoric Acid

Detergents: Sodium Metasilicate, Disodium Phosphate, Anhydrous, Trisodium Phosphate, Tetrasodium Pyrophosphate, Anhydrous

Treating Agents: Aluminum Sulfate

Mud Conditioning: Sodium Silicate, Disodium Phosphate, Trisodium Phosphate, TSPP (Tetrasodium Pyrophosphate)

Other Chemicals: Aqua Ammonia, Nitric Acid, Potassium Nitrite Glauber's Salt, Anhydrous

Special Catalysts, Addition Agents, Inhibitors: Consult us on your requirements

BAKER & ADAMSON Reagents and Fine Chemicals

The products advertised are commercial chemicals having various uses, some of which may be covered by patents, and the user must accept full responsibility for compliance therewith.

BASIC CHEMICALS

FOR AMERICAN INDUSTRY

···as your source of sulfuric acid

At the turn of the century, General Chemical pioneered the Contact Process of sulfuric acid manufacture in America. This development made possible the economical production of high strength acid for the first time and contributed markedly to industrial growth.

Over the years, General Chemical has become a major source of supply of the Petroleum Industry for this basic process chemical, meeting its most exacting requirements through progressive research and advanced production techniques. That is why so many purchasing and operating executives rely exclusively on General Chemical to meet their needs. For certainty, they always *Specify "General Chemical."*

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N.Y.

Offices: Albany • Atlanta • Baltimore • Birmingham • Boston Bridgeport • Buffalo • Charlotte • Chicago • Cleveland • Denver Detroit • Houston • Kansas City • Los Angeles • Minneapolis • New York Philadelphia • Pittsburgh • Portland (Ore.) • Providence • San Francisco Seattle • St. Louis • Wenatchee • Yakima (Wash.)

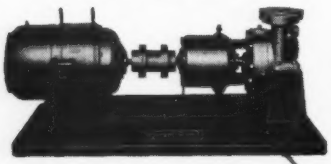
In Wisconsin: General Chemical Company, Inc., Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

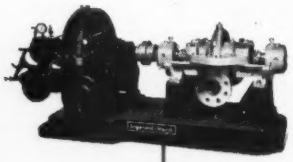
You specify { **THE FLUID** (GAS OR LIQUID)
THE TEMPERATURE
AND THE PRESSURE

We'll specify **THE PUMP**

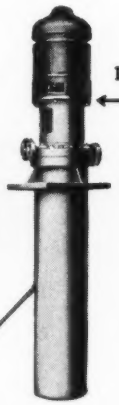
Vertically-split cradle mounting for pressures to 600 psi



Horizontally-split, single-stage for pressures to 450 psi

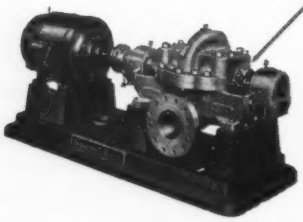


Vertical, multi-stage for pressures to 1700 psi

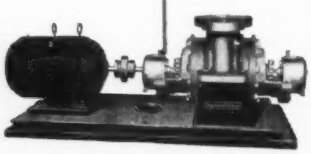


Mixed flow for heads to 90 ft per stage

Horizontally-split, tow-stage for pressures to 500 psi

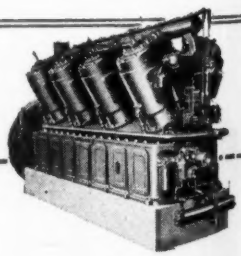


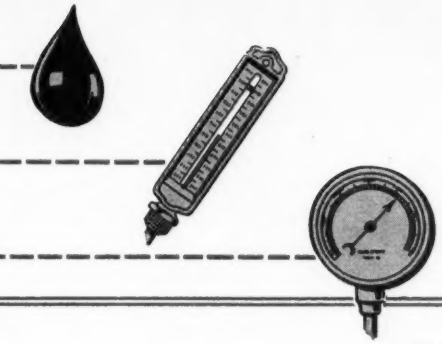
Vertically-split, two-stage for pressures to 600 psi



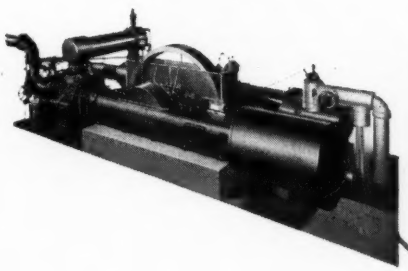
Mixed-flow vertical for pressures to 600 psi

...And **WE ALSO BUILD**

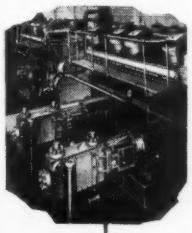




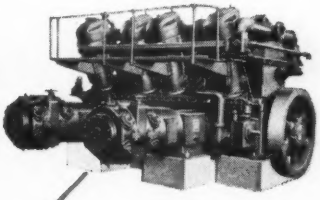
Steam-driven compressors, hp sizes to 3000



Non-lubricated cylinders for compressors of all sizes - for jobs requiring oil-free air or gas

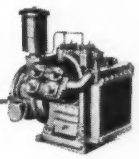


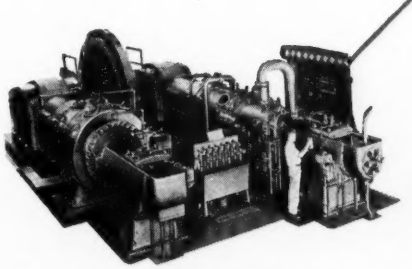
4-cycle gas-engine-driven compressors for pressures to 6000 psi 75 to 1200 hp sizes



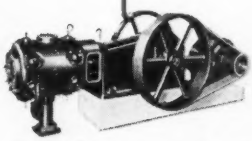
...or the COMPRESSOR

Air-cooled compressors, ½ to 90 hp

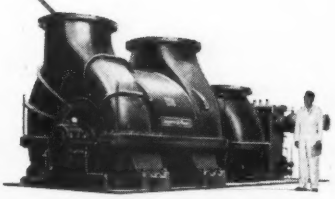




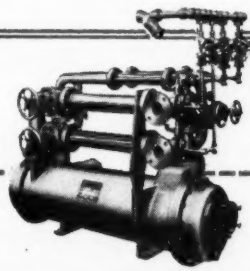
Synchronous motor-driven compressors, pressures to 15,000 psi 75 to 3000 hp sizes



Belt-driven compressors for pressures to 3000 psi, 5 to 300 hp sizes



Centrifugal Blowers for pressures from ½ to 100 psi —2 to 30,000 hp sizes

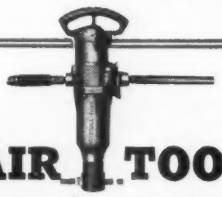


ENGINES

Gas engines—185 to 1200 hp
Diesel Engines—225 to 900 hp

VACUUM EQUIPMENT

Steam-jet ejectors—steam condensers—reciprocating vacuum pumps—water-vapor refrigeration



AIR TOOLS

A type for every need—Impact wrenches—drills—grinders—chippers—scales—tampers—diggers—etc.

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

258-14

GET THE RIGHT COMBINATION IN THE *SHORTEST TIME--*

THE *Guiberson* TYPE "A"

UNITIZED TUBING BLOCK AND HOOK

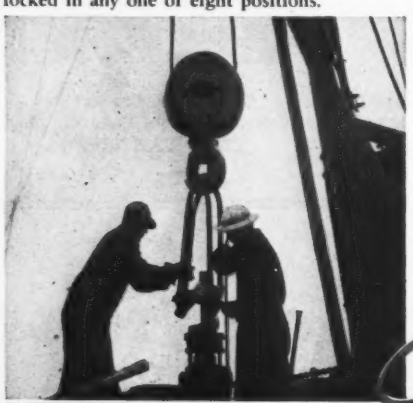
• Designed for quick change from one combination to another, this new matched line of block and hooks gives the "well man" an unusually versatile line of tubing blocks, hook, becket, shackle and bail with complete interchangeability of units and assemblies.

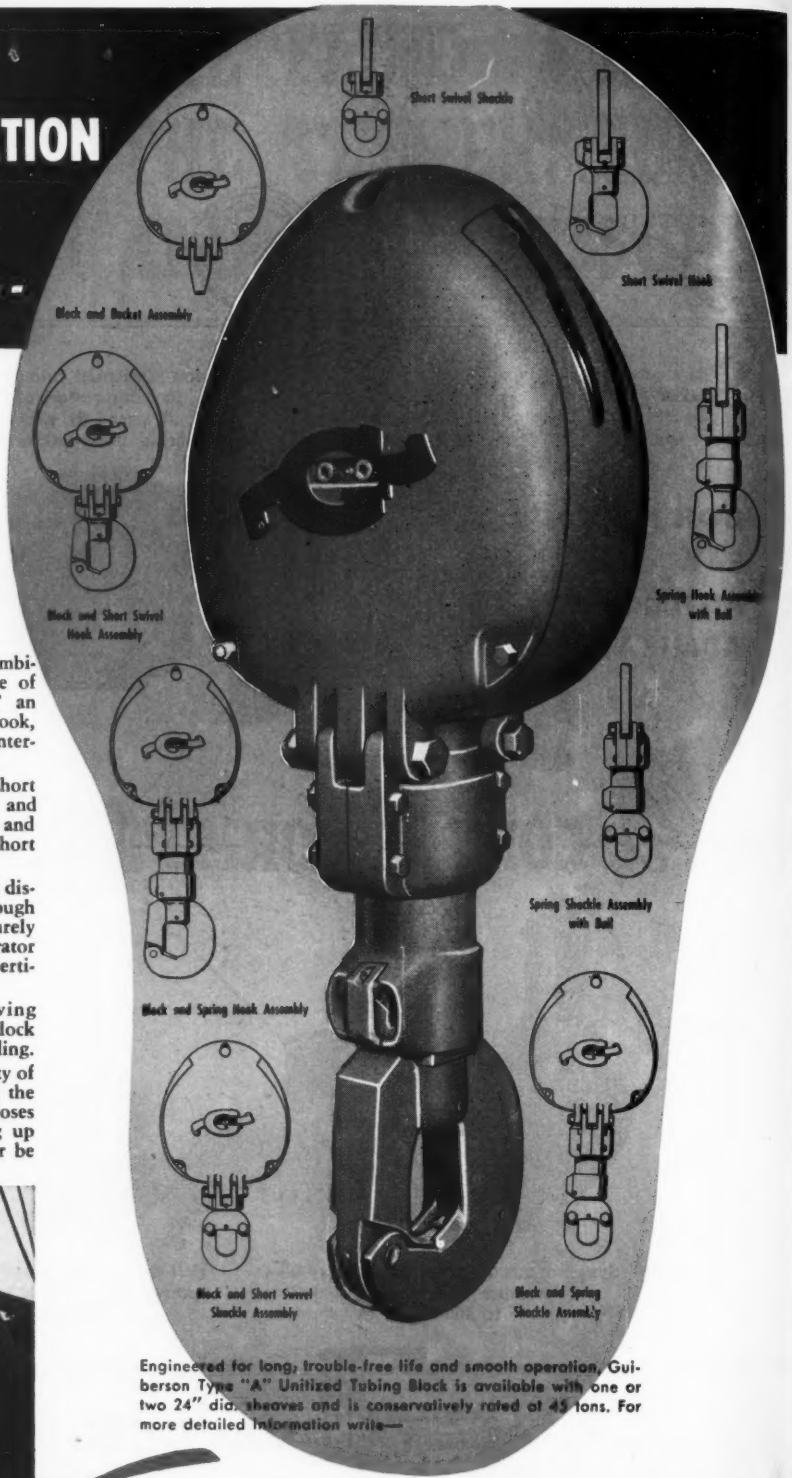
The matched assemblies give the operator short and compact hook-ups for portable rigs and short derricks . . . rigging up is simplified and added rig height is gained through its short dimensions.

Hook is designed for safety by partial load distribution to link. Link latches into hook through machined surfaces. Latch locks link securely into place and can be opened only by operator on derrick floor. Latch is not affected by vertical shock loads.

Blocks and hooks are streamlined, having no projections, assuring maximum safety. Block opens quickly for line changes or threading.

Lines are reeved into block without necessity of disconnecting hook or laying assembly on the floor. Quick opening bill (link) on hook closes and latches automatically when picking up bails. Hook may either swivel freely or be locked in any one of eight positions.




Short Swivel Shackle
Short Swivel Hook
Block and Becket Assembly
Block and Short Swivel Hook Assembly
Spring Hook Assembly with Bail
Spring Shackle Assembly with Bail
Block and Spring Hook Assembly
Block and Short Swivel Shackle Assembly
Block and Spring Shackle Assembly

Engineered for long, trouble-free life and smooth operation, Guiberson Type "A" Unitized Tubing Block is available with one or two 24" dia. sheaves and is conservatively rated at 45 tons. For more detailed information write—

Guiberson U. S. A.

THE GUIBERSON CORPORATION

DALLAS, TEXAS

California Distributor: The W. R. Guiberson Co., 717 East Gage Avenue, Los Angeles 1, California. Export Office: 30 Rockefeller Plaza, New York 20, New York.

ESTABLISHED 1919

Branch Offices in Oklahoma City, Okla.; Tulsa, Okla.; Longview, Texas; Kilgore, Texas; Houston, Texas; Alice, Texas; Odessa, Texas; Wichita Falls, Texas; Lafayette, La.; Wichita, Kansas; Newark, Ohio

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You see, the minimum percentage of antimony set forth in Chase Patent No. 2,061,921 is .007%. Under certain mild exposure conditions this quantity would prove effective. However, experience has shown that a minimum of about .015% is essential to give reasonably complete protection against dezincification under the entire range of conditions.

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Every builder and operator of high speed Diesels wants the same things: dependability, no loss in power, fewer overhauls and low fuel and oil consumption!

That's why more and more are specifying Koppers American Hammered Piston Rings which embody the greatest engineering advances in the history of compression engineering—Porous Chrome* and K-Spun, the miracle metal for piston rings.

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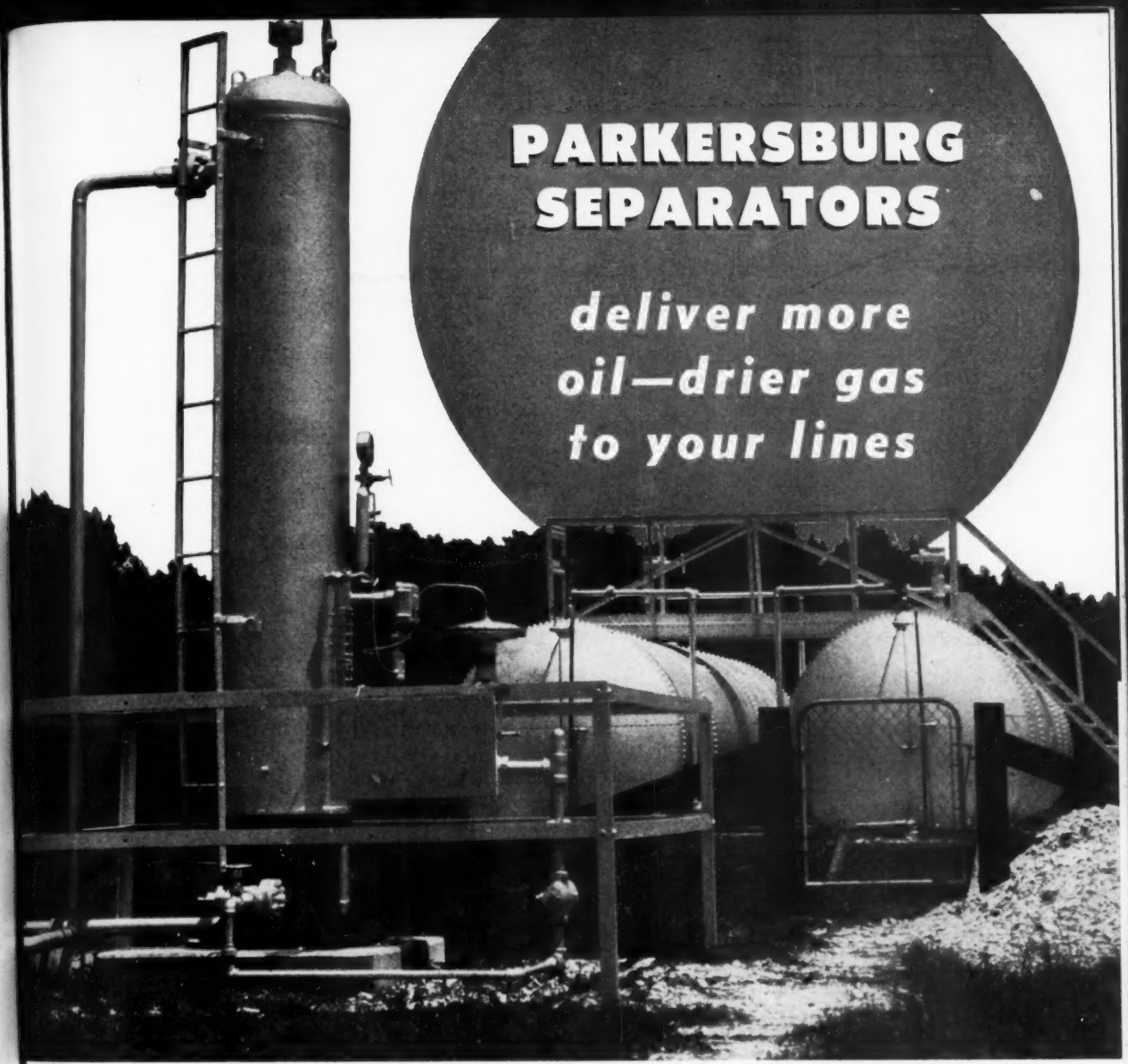
KOPPERS

American Hammered Piston Rings

A PRODUCT OF KOPPERS RESEARCH



PARKERSBURG SEPARATORS

deliver more oil—drier gas to your lines

It's what comes out of your separator that's important. That is why Parkersburg Separators are first choice. Operators want the greater volume of oil and drier gas which can only be obtained by Parkersburg's triple separating action. Comparative tests prove it!

1. Centrifugal action of the fluid and gas from the time it enters the separator until discharged maintains a continuous separating process.
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Thus, fluid and gas is in a constant state of separation as it moves through the separator. With such effective and continuous separating action, there can be no doubt as to why Parkersburg Separators deliver more oil and drier gas to your lines.

Ask your nearest Parkersburg Representative for complete facts about Parkersburg Separators before you install your next separator.

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THE PARKERSBURG RIG & REEL CO.

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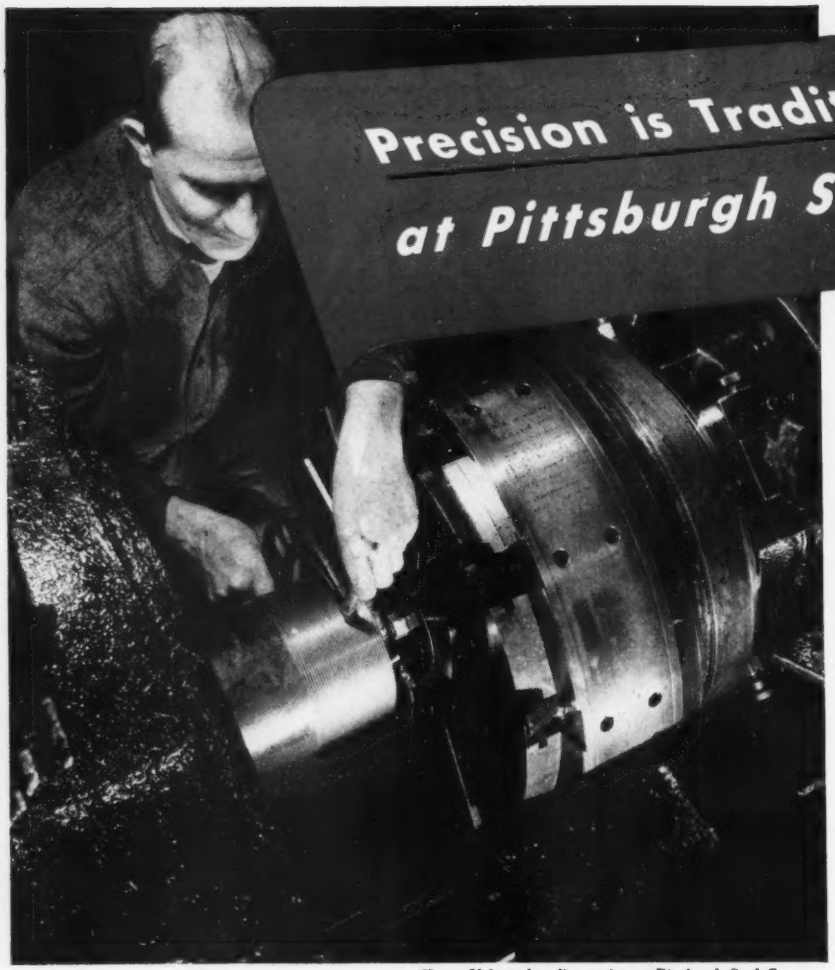

Henry Nalepa threading casing at Pittsburgh Steel Company

Pittsburgh Seamless oil country goods give you good reliable service year in and year out because of tradition—for example the tradition of making precision threads. As pioneers in precision threading Pittsburgh workmen aided by expert technical advice and up-to-date equipment have continued to lead in producing the best in seamless drill pipe, casing and tubing. This leadership is a moving force as we constantly seek ways to improve methods—so that we may better meet the requirements of the oil and gas industry. Pittsburgh Steel Company, 3241 Grant Building, Pittsburgh 30, Pa.

PITTSBURGH STEEL COMPANY

consider this OUTSTANDING ADVANTAGE of the famous WHELAND SWIVEL

WASH PIPE, special nickel alloy steel, carburized, precision machined, wearing surface heat treated to 600 Brinnell hardness, precision ground, polished and honed for maximum smoothness and minimum packing wear. Wash pipe outside diameters are precision machined in one operation assuring perfect concentricity and perfect alignment. No place to form pockets or restrict mud flow.

Wash pipes can be replaced with minimum time and effort. With just average care, the replacement goes in EASILY and in PERFECT ALIGNMENT.

ALSO IMPORTANT: Spring loaded, lubricated, extra deep, chevron type, wash pipe packing. Lower stem lubricated packing is triple sealed. All packings automatically adjusted, pressure grease lubricated through readily accessible fittings.

All bearings have capacity far in excess of Wheland's capacity ratings. Timken main load bearing with radial and thrust above and below to maintain perfect stem alignment. Upper thrust bearing, tapered cone. All bearings positively sealed off from mud and run in circulated, cooled oil. Large oil capacity.

Long radius gooseneck, streamlined manganese vanadium steel body, lower grease seal, special hold down construction, freedom from adjustments.

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Model E-7000—Capacity 464,300 lbs. at 100 R.P.M.
Model E-6600—Capacity 350,000 lbs. at 100 R.P.M.
Model E-6200—Capacity 262,000 lbs. at 100 R.P.M.
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Write Dept. OI-4 Bulletin No. 173 sent on request gives details, shows why more and more people are saying:

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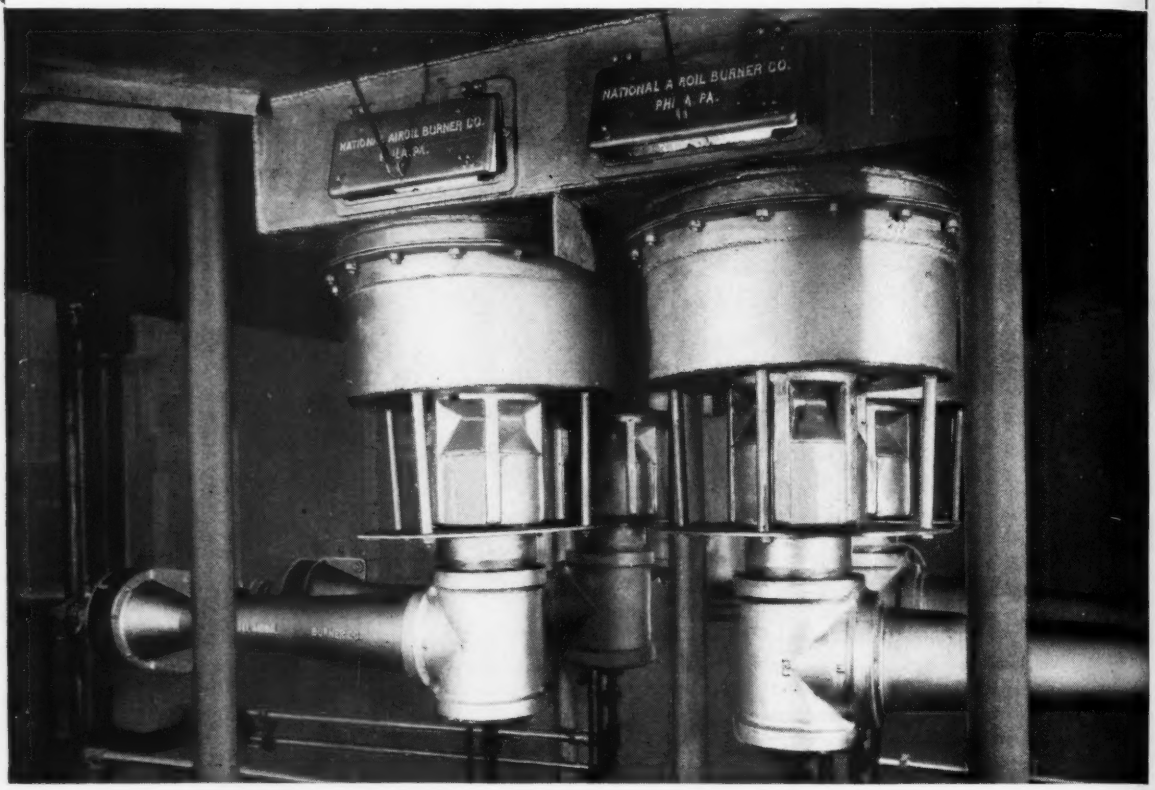
NATIONAL AIROIL FUEL OIL-GAS BURNERS

for your **UP-FIRED** Petroleum Heaters, use...



"AIROCOOL" OIL-GAS
TANDEM COMBUSTION UNITS

The above photo shows a group of four NATIONAL AIROIL TANDEM COMBUSTION UNITS, recently installed in a large Pennsylvania refinery. The burners are located at the Petro-Chem Furnace of the Vacuum Distillation Unit in this refinery. Although the installation was one of special application, "National Airoil" TANDEM UNITS very readily "fitted into the picture" with no trouble and a minimum of cost. This is because "AIROCOOL" TANDEM COMBUSTION UNITS are also designed for firing vertically upward, as shown, and are easily applied to all types of process furnaces.

The TANDEM UNIT maintains a high flame temperature with either fuel oil or gas; can be brought quickly to full capacity with a clean flame; and flame can be regulated and directed to uniformly radiate heat to the absorbing surfaces without flame impingement.

For complete details about the TANDEM COMBUSTION UNIT and the various types available, write

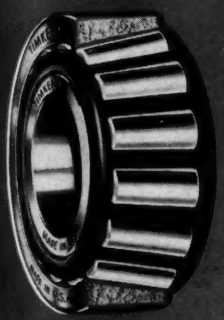
NATIONAL AIROIL BURNER CO., INC.

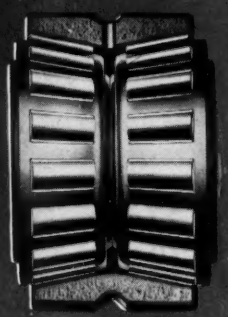
Main Offices & Factory: **1236 EAST SEDGLEY AVENUE, PHILADELPHIA 34, PA.**

Texas Office: 2512 South Boulevard, Houston 6

INDUSTRIAL OIL BURNERS, GAS BURNERS, FURNACE EQUIPMENT

Taming The Oil Field's *Toughest* Jobs.



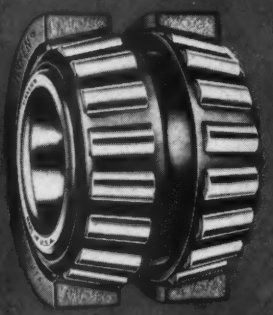


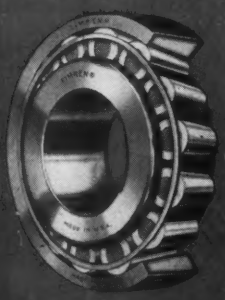
The oil fields are full of tough jobs for bearings — but none too tough for Timken bearings.

From derrick crown to derrick floor, in equipment of all kinds, the consistently outstanding performance of Timken bearings has won world-wide acclaim and acceptance. Timken bearings have participated in more record deep-drilling achievements than any other bearings.

The realization and appreciation of its superiority by manufacturers and users of oil field machinery have made the Timken bearing the oil industry's No. 1 bearing. It is a strong factor in keeping the drills going down and the oil coming up.

Make sure you have Timken bearings in the equipment you buy or build — with the trade-mark "TIMKEN" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address "TIMROSCO".





TIMKEN

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TAPERED ROLLER BEARINGS

NOT JUST A BALL ◯ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⬮ AND THRUST →⬮← LOADS OR ANY COMBINATION →✳←

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PLUS Power . . Speed . . Mobility

Many Uses . . .

The Model HM Payloader will do many earth-moving jobs and can move fast from job to job. Digs slush pits, clears and grades drilling sites, builds and maintains haul roads, builds dikes and firewalls, backfills trenches, loads trucks, lifts and moves supplies. Bulldozer Blade is also available, quickly interchangeable with the bucket.

Write for Free Catalog

on the Model HM or on other sizes of Hough Payloaders—the 1¼ cu. yd. Model HL, the ¾ cu. yd. Model HF, the 10½ cu. ft. Model HA.

Here is an entirely new experience in earthmoving — an entirely new conception of the work capacity and job capacity of a rubber tired tractor shovel. Here is an entirely new tractor shovel—revolutionary in design—revolutionary in performance.

Big and powerful, the 1½ Yd. Model HM PAYLOADER provides tremendous digging power and ground-gripping traction for tough going in rock, sand, mud, muck or *any* terrain. With 4-Wheel Drive on large rubber tires it provides traction comparable to a crawler tractor—plus more speed, greater mobility, easier maneuverability and *far less maintenance expense.*

Compact design, short wheel base and power boosted rear wheel steering enable the HM to operate in close quarters. It has four forward speeds up to 16 mph and four reverse up to 24 mph and quick acting forward-reverse control. Double acting finger-tip hydraulic control raises — lowers — dumps and closes the bucket . . . provides powerful down pressure for tough digging. Get the complete story on this new Model HM PAYLOADER from The Frank G. Hough Co., 749 Sunnyside Avenue, Libertyville, Illinois.

SAY "HUFF"

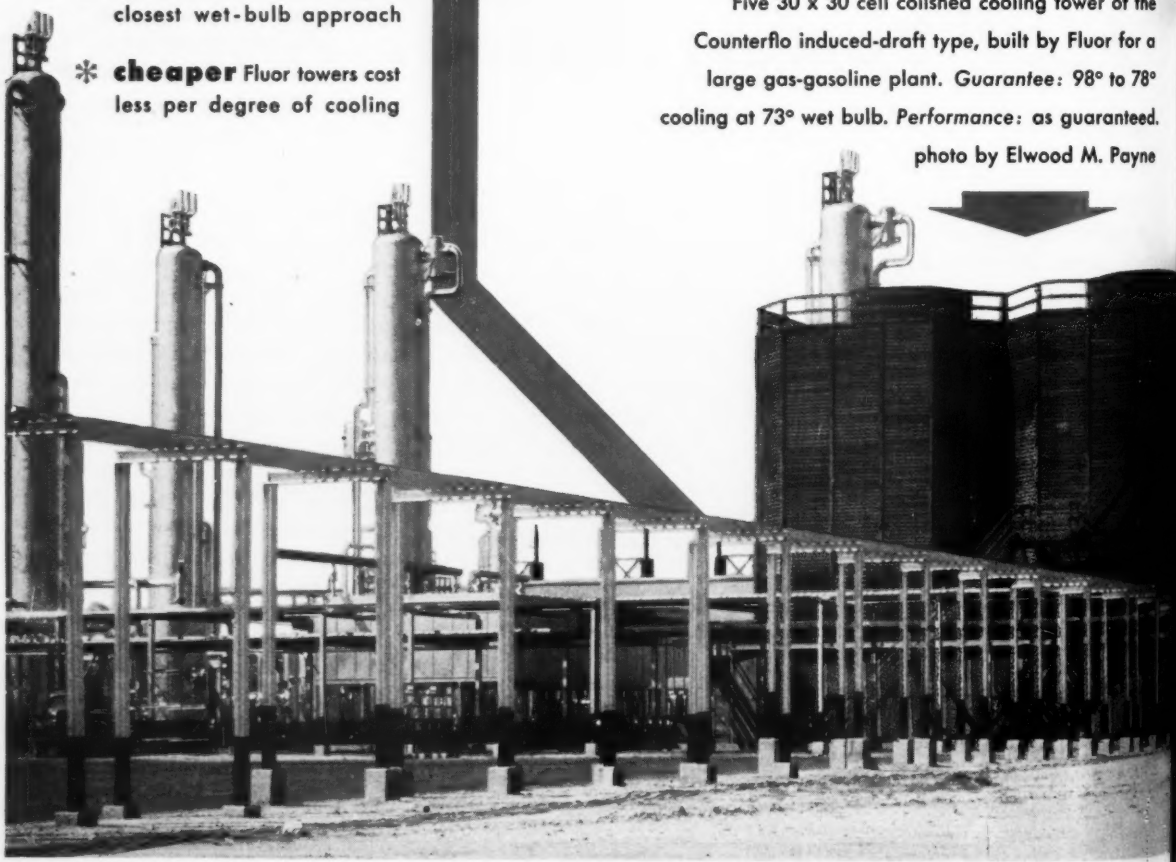
HOUGH PAYLOADER

Manufactured by THE FRANK G. HOUGH CO.

every FLUOR counterflo cooling tower delivers colder water cheaper

Every Fluor *Counterflo* tower cools to the guaranteed temperature. Does this *insured performance* cost you more? No! Fluor towers are prefabricated in standard cell sizes for low erection costs—and engineered to give maximum cooling per fan horsepower.

* **colder** Fluor towers give closest wet-bulb approach
* **cheaper** Fluor towers cost less per degree of cooling



Five 30 x 30 cell coilshed cooling tower of the Counterflo induced-draft type, built by Fluor for a large gas-gasoline plant. *Guarantee:* 98° to 78° cooling at 73° wet bulb. *Performance:* as guaranteed. photo by Elwood M. Payne

aerator towers

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pulsation dampeners

gas cleaners

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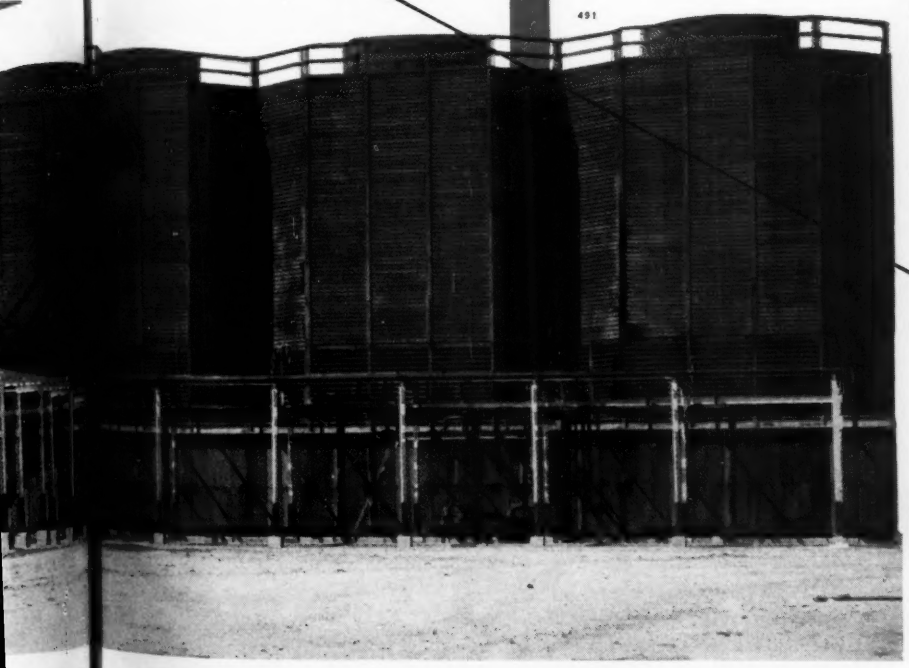
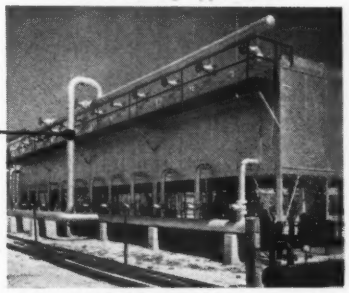
SAVE YOUR COMPANY MONEY

Before buying a cooling tower, we urge you to look at the engineering *facts* presented in the new booklet "Colder Water Cheaper". Write us for your copy.

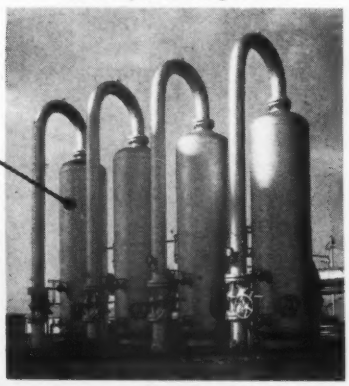


Fluor Aerator cooling towers, have distinctive economy features and are most practical in certain cooling applications.

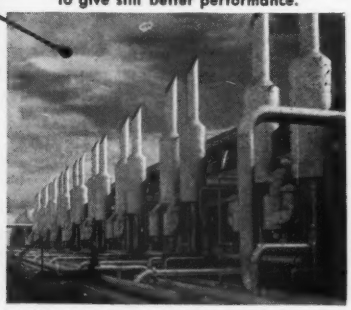


Fluor air-cooled heat exchangers are more economical where make-up water is expensive, where water has bad scaling characteristics, and where the temperature of liquid to be cooled is relatively high. (Manufactured and sold by Fluor and Griscom-Russell Co.)

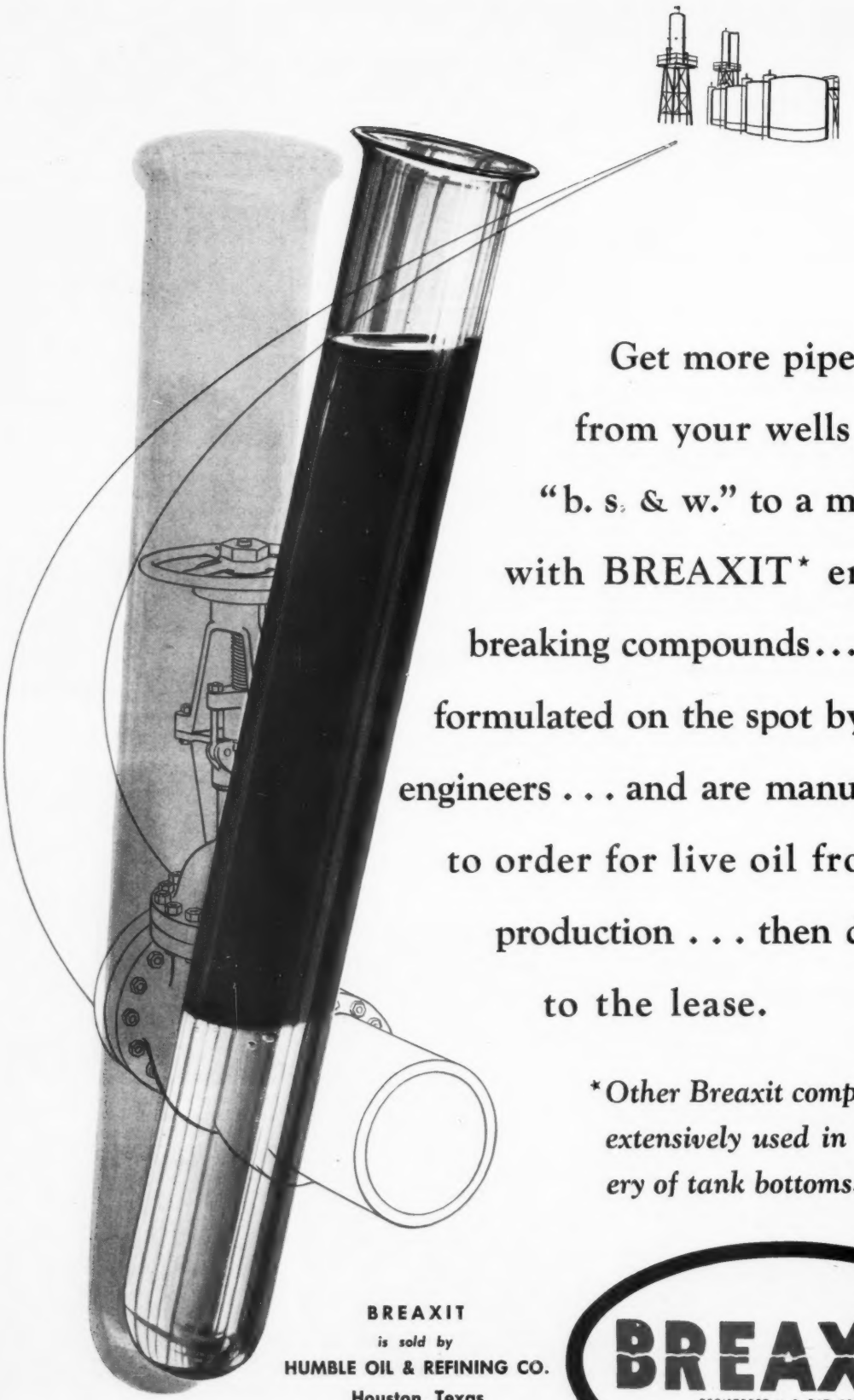
Fluor pulsation dampeners remove destructive vibrations and instrument irregularities caused by pulsative gas flow.



The Fluor gas cleaner, already well-known for efficient cleaning, has been redesigned to give still better performance.



Fluor mufflers, redesigned to incorporate pulsation-dampener principles, reduce exhaust-line noises to less than the mechanical noises of the compressor room.



Get more pipe line oil from your wells . . . Cut "b. s. & w." to a minimum with BREAXIT* emulsion breaking compounds . . . they are formulated on the spot by trained engineers . . . and are manufactured to order for live oil from your production . . . then delivered to the lease.

Other Breaxit compounds are extensively used in the recovery of tank bottoms.

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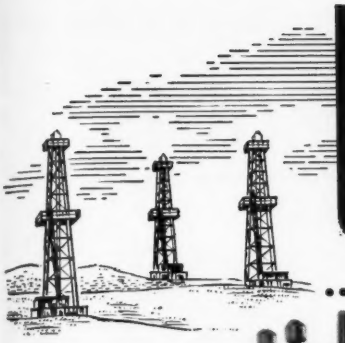

FOR OIL FIELD JOBS *the World over*

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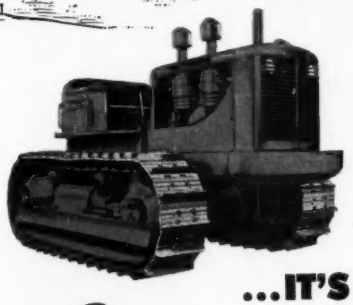
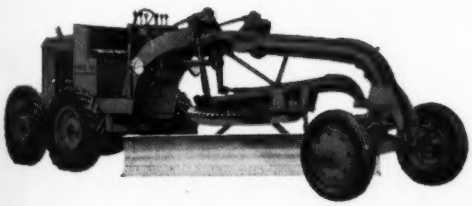


for bulldozer, scraper and winch work; any heavy pulling, pushing or lifting. Four sizes, 11,000 to 40,000 lbs. . . . powered by famous General Motors 2-cycle diesel engines. The smooth operating HD-19 — 40,000 lbs. — is the WORLD'S LARGEST TRACTOR and has a hydraulic torque converter drive (exclusive with Allis-Chalmers) . . . outperforms, outpulls any tractor ever built. Matched Allied equipment for all models.

...IT'S AC WHEEL-TYPE TRACTORS

for fast, economical mowing, sweeping, snowplowing and countless pulling and pushing jobs around tank farms, refineries and other buildings. Two models — B and IB. Both provide 13½ drawbar h.p., 16.31 on belt; available with rear power take-off and belt pulley, other attachments. Model IB is built lower and has a mounting frame for attaching auxiliary equipment. The IB is also available with fixed, front-end crane and other equipment.

...IT'S AC MOTOR GRADERS



for building and maintaining haul roads, tank farm lands, parking lots and yards, and for scarifying. For light work, use the economical, general purpose W-Speed Patrol — gasoline powered . . . ideal for operation in narrow quarters. For heavy work, there's a choice of four diesel-powered sizes — 50.5 to 104 brake h.p. . . . provide a full range of blade positions, high throat clearance, extra traction and direct down pressure of blade for more accurate work.

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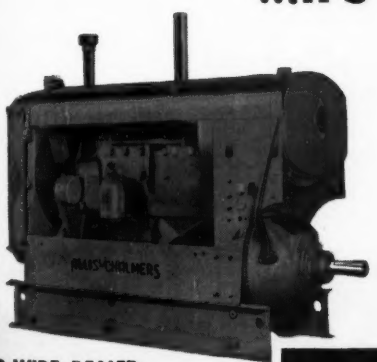

for powering pumps, winches, welders, drills, compressors, generators, pipe cleaners and straighteners, rock crushers, elevators and hoists, all kinds of oil field servicing equipment. Heavy-duty in every respect — designed for tough tractor service — stand up on toughest going. Slow speed, high torque — hang-on to overloads like "steam power." Operate on gasoline, low grade fuel, distillate, butane, natural gas. Five sizes — from 74 to 590 ft. lbs. torque.

* These engines sold exclusively to the petroleum industry through Fred E. Cooper, Inc., Tulsa, Oklahoma.

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DEPENDABLE, MATCHED ALLIED EQUIPMENT

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reduce maintenance costs

with NATIONAL CONDENSING AND COOLING SECTIONS

SUBSTANTIAL savings in maintenance costs are being realized by many petroleum refineries, chemical plants and by-product coke plants, who are handling their condensing and cooling services with NATIONAL Sections.

Economy in maintenance is inherent in NATIONAL Sections for the following reasons:

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- *Ease of Assembly and Replacement*
- *Long Life due to Corrosion Resistance of Cast Iron*
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For information concerning NATIONAL Condensing and Cooling Sections, please write for our Catalog CP-16.

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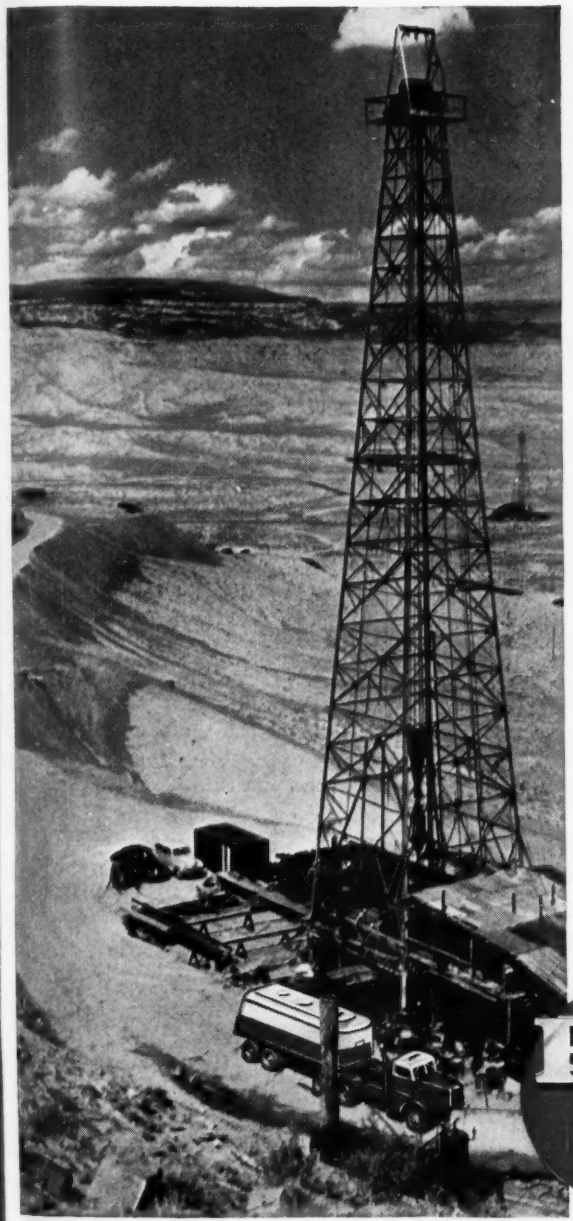

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ARE PART OF TODAY'S MODERN EQUIPMENT FOR LOCATING OIL WELLS AND CONSERVING THEIR PRODUCTION

The exploration, drilling and servicing of oil wells are scientific procedures which conserve a vital natural resource.

FWD four-wheel and six-wheel-drive motor trucks are "prime movers" of heavy equipment in all of these vital operations.

With driving power on all wheels FWD trucks haul heavy loads with surety and safety on the highway or across open country over terrain impassable to conventional trucks. FWDs rank foremost in oil field operations as they do in many other fields of heavy-duty truck service.

THE FOUR WHEEL DRIVE AUTO CO.
CLINTONVILLE, WISCONSIN
Canadian Factory: KITCHENER, ONTARIO

FWD

America's Foremost Heavy-Duty Truck

The M6 x 6 FWD trucks pictured here are hauling bulk cement to location — heavy loads, on long hauls, over difficult terrain.

Made in England

BOFEC "GUNBARREL" DRILL COLLAR 8 inch ext. diam. by 50 feet long made to close limits on gun making equipment.

Close inspection on all processing ensures accuracy and quality.

Special packing methods provide maximum protection.

Annealed and normalised full length at one operation . . . heat treated and quenched vertically eliminating buckling and bending . . . rolling test for checking straightness . . . shoulders "fine" finished and square with screwings . . . boxes thread milled after heat-treatment . . . alignment of boxes within $\frac{1}{16}$ inch in 20 feet . . . box gaugings to ·002 inch tolerances . . . alloy steel forgings not rolled bars . . . ultimate tensile 60 tons per square inch. 289/310 brinnel hardness.

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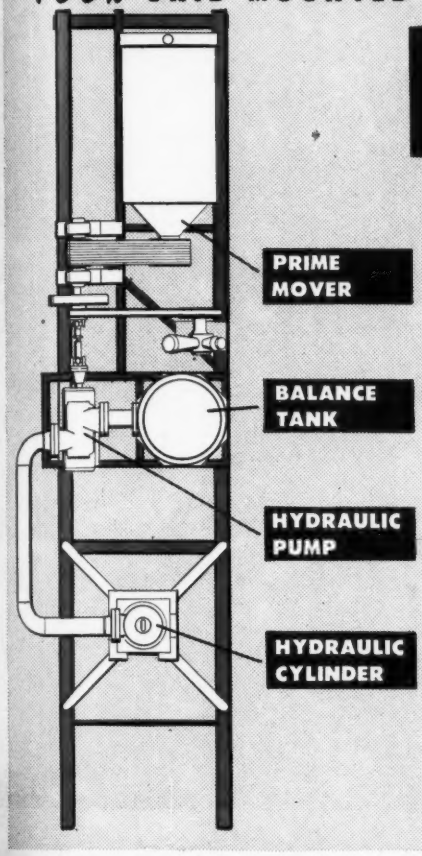
The Largest "ALL BRITISH" Company Manufacturing Exclusively Oilfield Equipment

BRITISH OILFIELD EQUIPMENT CO., LTD., BOFEC WORKS · HUNSLET LEEDS 10, ENGLAND · TEL. LEEDS 30035/6/7/8 · CABLES BOFEC, LEEDS

LONDON OFFICE · DUKE'S COURT · 32 DUKE STREET · ST. JAMES'S S.W.1 · TEL. WHITEHALL 6177 · CABLES BOFEC, PICCY, LONDON

A NEW ADDITION TO THE PELTON "Pelican" SERIES

A COMPLETELY UNITIZED
Long Stroke
HYDRAULIC PUMPING JACK
***100%* SKID MOUNTED**



PROVEN BY NINE YEARS OIL WELL PUMPING.
BACKED BY 65 YEARS OF HYDRAULIC DESIGN AND MANUFACTURE.

THE PELTON "Pelican" SERIES

All Series A and Series A-P utilize a positive displacement pump and a full hydraulic stroke reversal control. This combination adds up to HIGH EFFICIENCY and SOFT ROD REVERSALS.

Whether your pumping depth is 2,000 feet or 12,000 feet, PELTON Engineers have facts and figures to prove how a PELTON can increase production—decrease costs. Write for Bulletin No. 38.

UNITIZED DESIGN • SIMPLIFIED CONTROLS • CLEAN INSTALLATION

The PELTON A-P, which is completely skid mounted, complements the Standard Series A, in which the pump group and the prime mover are located any desired distance from the well, and the hydraulic cylinder is mounted at any desired height above the well. However, both the Series A and A-P incorporate new simplified operating controls, utilizing but two operating valves.

In the A-P design, the *complete jack,* including the prime mover, balance tank, hydraulic pump and the hydraulic cylinder, is mounted on a single portable skid. As a result, *only one connection,* the gas line to the prime mover, is broken to move the jack on or off the well. The A-P design also makes it possible to work on the well *without breaking the hydraulic circuit* of the jack.

Series A and A-P Jacks are available in a *20 foot stroke length* and polished rod load ratings of 20,000 lbs., 26,500 lbs. and 35,000 lbs.

PELTON
REG. U. S. PAT. OFF.
LONG-STROKE HYDRAULIC PUMPING JACK

THE PELTON WATER WHEEL COMPANY

2929 NINETEENTH STREET
SAN FRANCISCO 10, CALIF.

BLW THE BALDWIN GROUP

2447 EAST FIFTY-FOURTH STREET
LOS ANGELES 11, CALIF.

DISTRICT OFFICES IN HOUSTON • ST. LOUIS • PHILADELPHIA • NEW YORK • OTHER PRINCIPAL CITIES

E-M JOB-ENGINEERED

PROTECTION FOR HEAVY-DUTY INDUCTION MOTORS

One of industry's most pressing needs has been dependable induction motors. It is a need that is now fulfilled by expertly designed E-M Squirrel-Cage Induction Motors, with their indestructible rotors, long-life insulation and cool-running, wear-resistant bearings. Along with the other extra-value advantages of these heavy-duty motors comes E-M job-engineered protection.

DRIP-PROOF—Motor in a mine at Leadwood, Missouri shown above. A strong, steel shield provides protection over a 30° arc, safeguarding the motor against falling liquids or particles.

SPLASH-PROOF—400 hp 1800 rpm motors shown left below are protected over a full 200° arc against damage from water or liquids in paper mill, chemical plant and pumping plant installations.

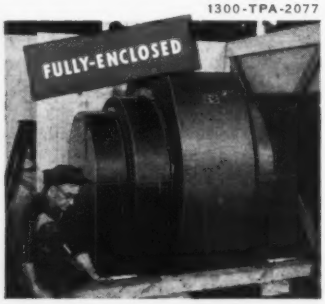
FULLY-ENCLOSED—1000 hp 1800 rpm motors illustrated at right below operating where surrounding air is contaminated with gas. Air entering the motor must be filtered, or drawn from uncontaminated sources.

In the E-M drip-proof motor shown above, —note that the frame flares out at the bottom to accommodate the extra volume of discharge air in that region. This is another instance where E-M's experience in big motor engineering results in more efficient design.

For the full story of what's been happening in induction motor design at E-M, just ask for Publications 189 and 190.

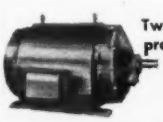
ELECTRIC MACHINERY MFG. CO.
MINNEAPOLIS 13, MINNESOTA

1300-TPA-2077



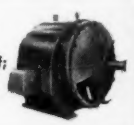
Types of
E-M SQUIRREL-CAGE INDUCTION MOTORS

Two-pole; drip-proof; ring lubricated bearings.



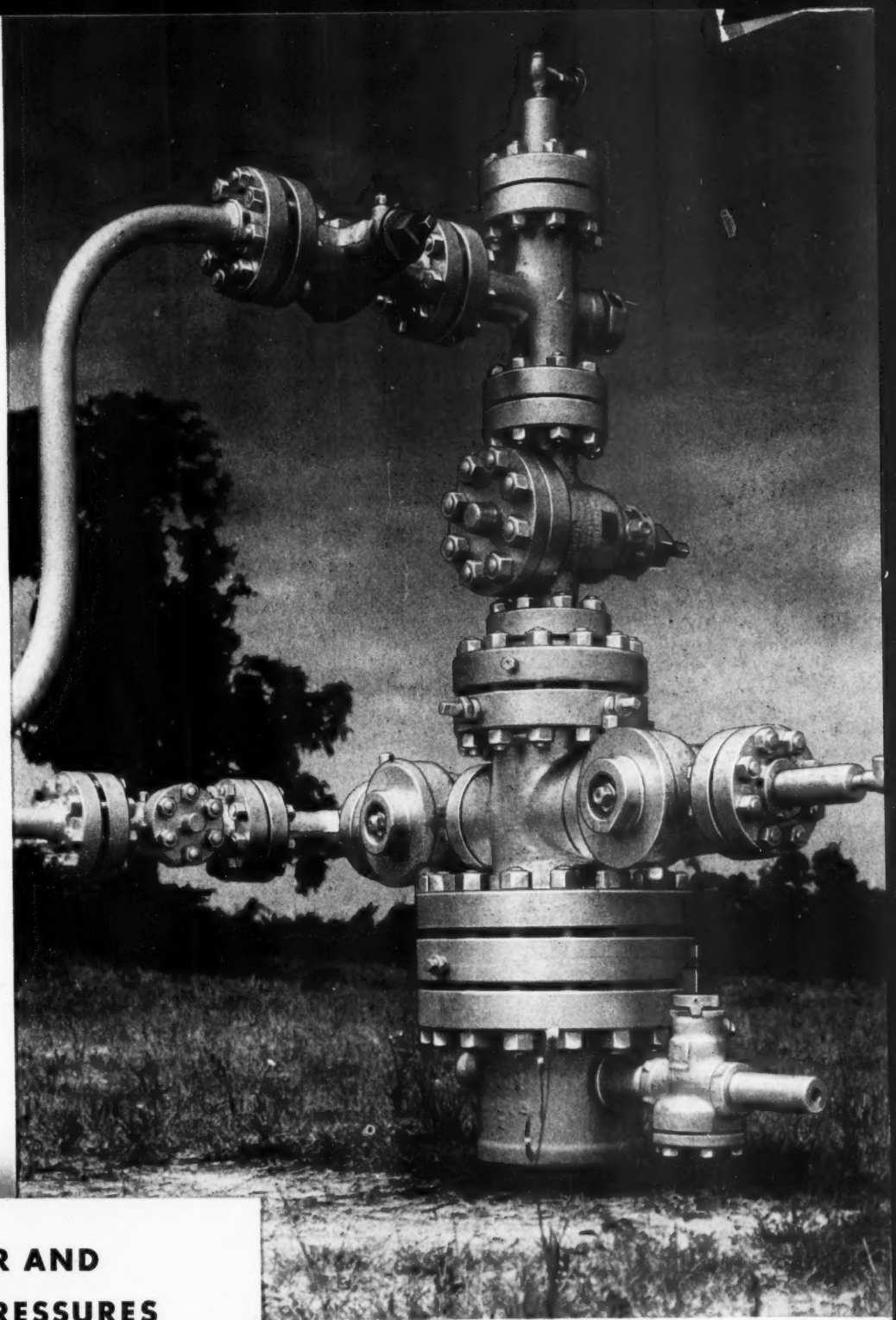
Two-pole; drip-proof; pressure lubricated bearings.

Four or more poles; drip-proof; sleeve bearings.



Four or more poles; splash-proof; ball bearings.

The safest valves for trees of steel



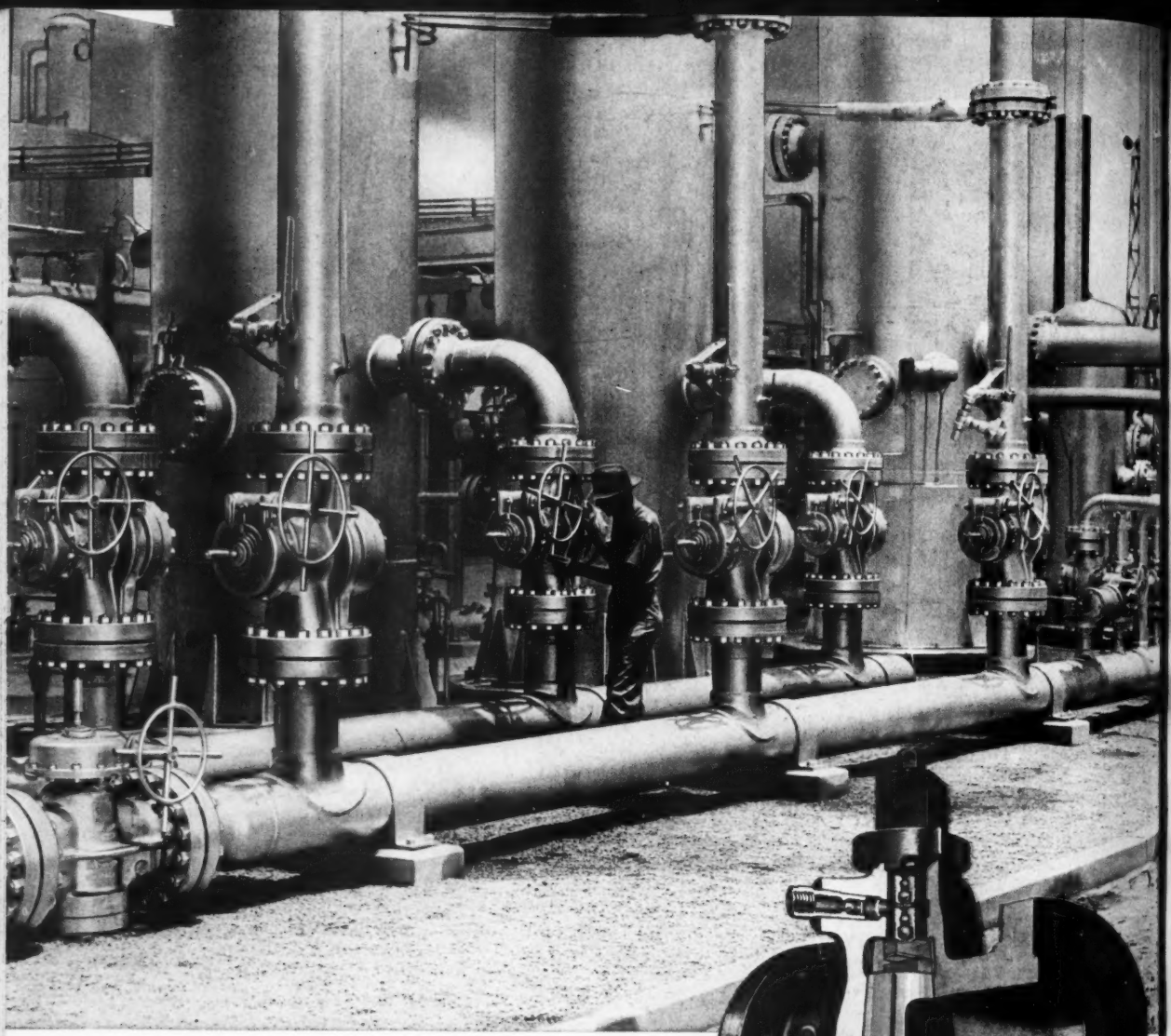
On this modern Christmas tree main valves are Nordstrom Hypreseals, bleeder valves are Edward gage valves; both Rockwell-built.

HIGHER AND HIGHER PRESSURES PERFECTLY CONTROLLED WITH

Nordstrom

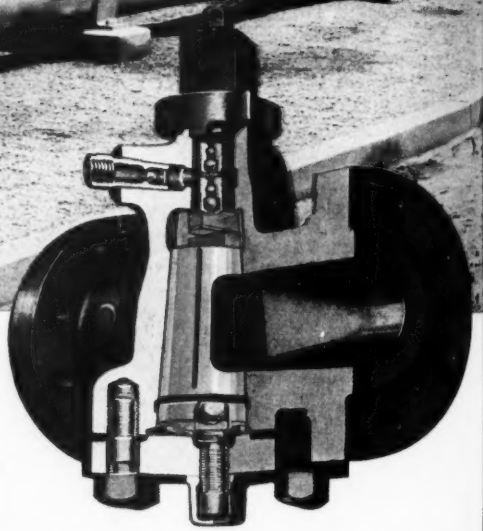
LUBRICATED VALVES

UP, UP, UP, go the pressures in Christmas trees—far beyond pressures encountered in most applications. Nordstrom designs valves for the highest pressures—tested as high as 15,000 psi. If you have a pressure condition in your plant or field, use Nordstrom valves. They are *safest!* You can repack Nordstrom Hypreseal valves in open or shut position with any pressure in the line. You can easily turn them on or off regardless of pressure, because the plug rotates on a film of lubricant which serves both as a perfect bearing, and as a positive pressure seal around each port.



"You don't have to tug at these valves"

Nordstrom Hypreseal valves are designed for pressures as high as are encountered in petroleum, gas and chemical fields. They are admirably suited for elevated temperatures, erosion, shock and other severe working conditions. Hypreseal valves embody a full-floating inverted plug, with separate adjusting and rotating members located on opposite ends of the plug, each having specially effective provisions against friction and external leakage. For intermediate and lower pressures Nordstrom standard valves are made in various types in Nordco steel, stainless steel, semi-steel, bronze and other alloys. The Nordstrom line gives you the right valve for every service requirement, from ½ in. to 30 in. sizes. Ask for descriptive literature.



The Hypreseal can be repacked under pressure, in any position

Keep Upkeep Down
Use *genuine*
Nordcoseal lubricants

Nordstrom

LUBRICATED ROCKWELL VALVES

Sealdport Lubrication

NORDSTROM VALVE DIVISION – *Rockwell Manufacturing Company*

WORLD'S LARGEST MANUFACTURERS OF LUBRICATED PLUG VALVES

***Main Offices:* 400 North Lexington Ave., Pittsburgh 8, Pa.**

Atlanta • Boston • Chicago • Houston • Kansas City • Los Angeles • New York • Pittsburgh • San Francisco • Seattle • Tulsa • and leading Supply Houses

Export: Rockwell International Corporation, 7701 Empire State Bldg., New York 1, N.Y.

A Background of PERFORMANCE

When you specify "HERCULES" (Red-Strand) Wire Rope, you select a product that has proved its dependability—time after time—by the acid test of actual service.

Such a long and *consistent* record of performance is not a matter of chance; instead, it is the result of many definite factors that have always governed the design and manufacture of "HERCULES" (Red-Strand) Wire Rope.

For wire rope qualified to withstand the stresses and strains encountered on tough jobs...use "HERCULES" and benefit by its time and money saving ability.

PREFORMED
and
NON-PREFORMED

"HERCULES"* the DEPENDABLE WIRE ROPE for any TOUGH JOB

* REG. U.S. PAT. OFF.

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

ESTABLISHED 1857

5909 KENNERLY AVENUE • ST. LOUIS 12, MISSOURI

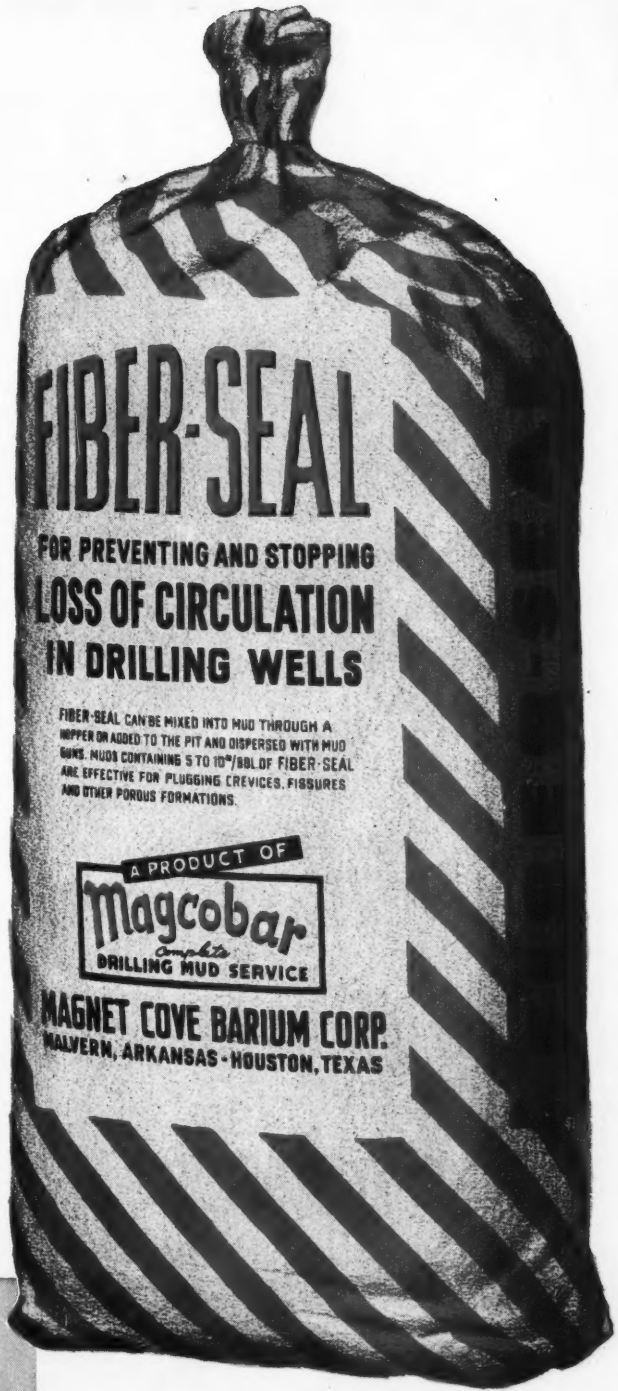
Out in Front

On all your trenching jobs, CLEVELANDS—easy operating, mobile, sturdy—set a fast dependable pace—meet and beat schedules—make real profits. Get detailed information from your nearest CLEVELAND distributor or address The CLEVELAND TRENCHER Co., 20100 St. Clair Ave., Cleveland 17, O.

TRADE MARK

CLEVELANDS

Here's Magcobar's solution to circulation problems!


FIBER-SEAL
FOR PREVENTING AND STOPPING
LOSS OF CIRCULATION
IN DRILLING WELLS
FIBER-SEAL CAN BE MIXED INTO MUD THROUGH A HOPPER OR ADDED TO THE PIT AND DISPERSED WITH MUD GUNS. MUDS CONTAINING 5 TO 10#/BBL OF FIBER-SEAL ARE EFFECTIVE FOR PLUGGING CREVICES, FISSURES AND OTHER POROUS FORMATIONS.
A PRODUCT OF
Magcobar
Complete
DRILLING MUD SERVICE
MAGNET COVE BARIUM CORP.
MALVERN, ARKANSAS - HOUSTON, TEXAS

● Magcobar FIBER-SEAL—a new and improved fibrous mixture containing strong hair-like fibers that build an impervious mat in fissures, cracks and porous formations through which mud will not pass—is a major contribution toward the ultimate solution of the hazardous and costly problem of *lost circulation*.

In developing FIBER-SEAL, the first consideration was to find a material that would form an impervious bridge in large openings and yet not foul the valves and other working parts of the circulating pumps. Exhaustive field tests indicate that FIBER-SEAL is by far the most desirable material developed to date for this purpose.

FIBER-SEAL is loosely packed in paper bags of convenient size for easy handling. It may be added through the hopper or directly to the mud pit. No hand fluffing is necessary. A few sacks will often stop mud loss promptly.

Keep 20 sacks on hand at the rig. It is cheap insurance against loss of rig time and expensive mud!

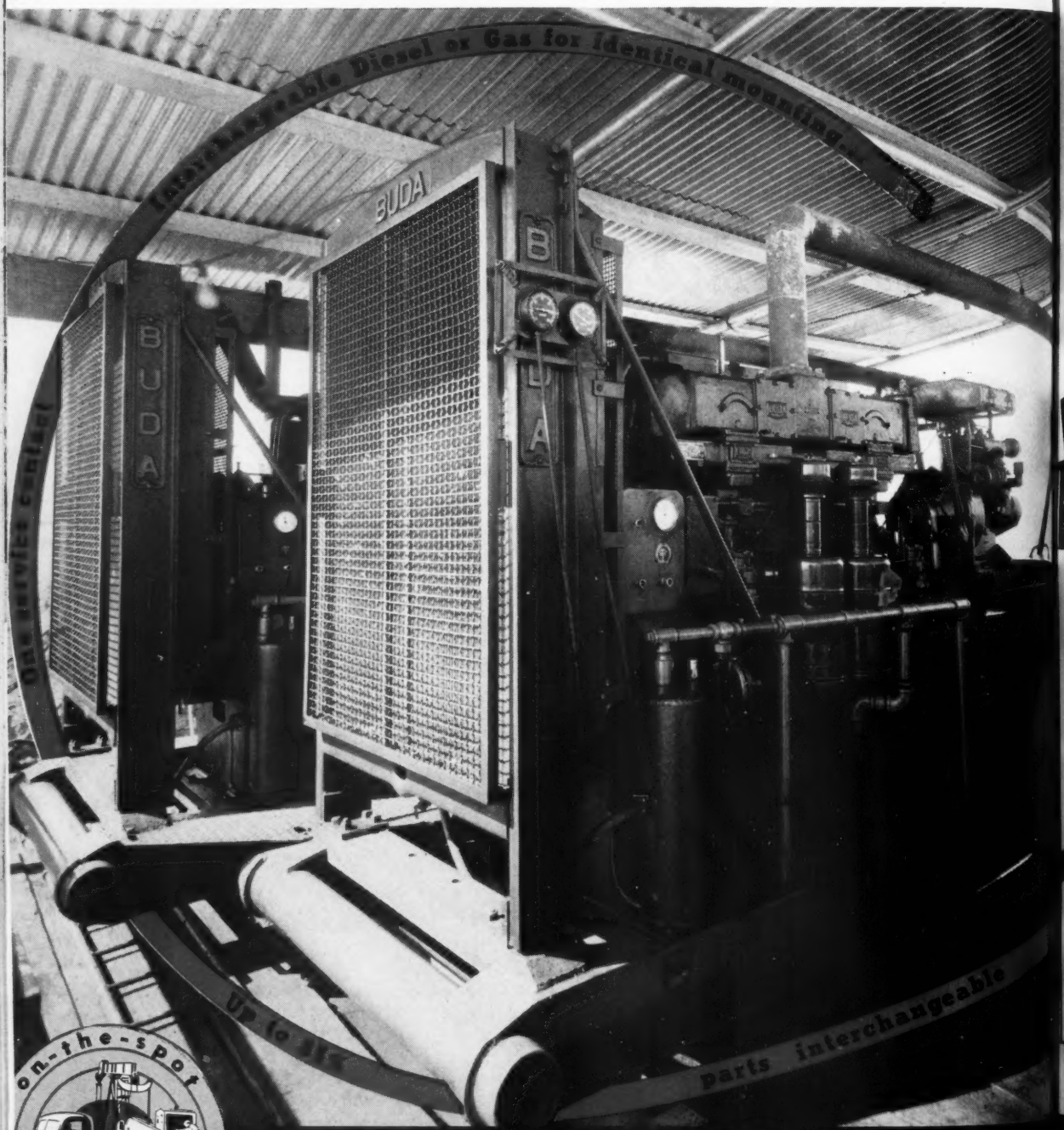
MAGNET COVE BARIUM CORP.
MALVERN, ARK. HOUSTON, TEXAS
Export Representative: Guy E. Daniels, 30 Rockefeller Plaza, New York 20, N. Y.

Magcobar
Complete
DRILLING MUD SERVICE
DEALER

Look for this sign
WHEN YOU NEED MUD

MAGCOBAR ● MAGCOGEL ● HIGH YIELD DRILLING MUD ● XACT CLAY ● FIBER-SEAL ● MAGCO-MICA ● TANNATHIN ● JEL-OIL MUD ● JEL-OIL "E" ● SALT GEL ● NOHEEV ● SEAL FLAKES ● MY-LO-JEL ● CHEMICALS

Only Buda can give you of *COMPLETE*



on-the-spot oil field service

See Your Buda Oil Field Engine Distributor

TEXAS — Dallas, Houston, Wichita Falls, Kilgore, Odessa, Alice • OKLAHOMA — Tulsa, Seminole, Oklahoma City • CALIFORNIA — Los Angeles, Long Beach, Bakersfield • MISSISSIPPI — Tinsley, Brookhaven • LOUISIANA — Shreveport • KANSAS — Great Bend, Ulysses • ILLINOIS — Salem
MICHIGAN — Mount Pleasant, Saginaw • COLORADO — Denver • WYOMING — Casper
NEW YORK — Bolivar, Wellsville, New York City (Export)

you the economies

RANGE of POWER

As illustrated below, Buda is the *only* engine manufacturer that can effectively meet *all* of your varying requirements for oil field power. This gives you better opportunity for engine *standardization*... also means increased flexibility and economy in solving *individual* power problems.

For example, in Buda's range of 32 oil field models — from 5 to over 400 HP — you'll find a dependable engine *exactly* fitted to your *particular* power and speed requirements. No need to risk "stretching" a model that's too small... or increasing your costs by using one that's too large. On most sizes you have a choice of speed characteristics in same power range for various operations.

In addition, Buda alone offers you a wide choice of *interchangeable* Diesel and Gas-Gasoline engines for *identical mounting*. This insures maximum operating efficiency with *either* class of fuel... lets you switch engines quickly on the job *without any costly changes in rigs or mountings*. For added speed and economy in maintenance and servicing, up to 85% of Buda parts in any one series are completely interchangeable.

Consider, too, the added convenience offered by Buda for handling *all* of your engine purchasing, engineering and service problems through *one experienced manufacturer-distributor organization*. The Buda Company, Harvey, Ill.

Here's Proof

HP RANGE (approx.)	Buda		Mfr. "A"		Mfr. "B"		Mfr. "C"		Mfr. "D"		Mfr. "E"	
	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas
5-8	BD-5											
7-15	BD-1											
15-30	BD-1	B-15										
20-35	BD-1	B-18										
20-40	BD-2	B-23										
25-50	BD-2	B-27										
30-60	DT-3	HP-3										
40-80	DT-4	K-42										
50-90		LO-5										
60-100	DC-6	MO-6										
75-150	DC-8	MO-8										
90-175	DCS-8*	MO-8										
120-200	DC-1	MO-1										
150-250	DCS-1*											
150-225	DC-1	PC-1†										
200-300	DCS-1*	PCS-1*										
225-325	DC-2	PC-2										
250-400	DCS-2*	PCS-2*										

NOT OFFERED

* Supercharged † Natural gas only

BO-10

BUDA

...A Power-full name in ENGINES

How RUGGED is RUGGED

...and is it important in an instrument?

"How rugged" an instrument is, has a great deal to do with "how long" it will remain in operation. Regardless of how accurate, sensitive or flexible an instrument may be, the value is low if the instrument goes out of service.

Our interpretation of an instrument's "ruggedness" is the ability to operate, under the most adverse conditions encountered, on applications for which it is intended.

In addition to being built to operate under outdoor conditions, the construction of the Republic Pneumatic Transmitter is more like that of a precision machine than of the sensitive instrument that it is. The design both permits and requires strength, as the force-balance principle could not be carried out with light, bendable parts. All bearings, levers, pins and other working parts must be heavy enough to carry appreciable loads and are therefore not susceptible to damage in ordinary handling or use.

We repeat—"ruggedness" is an important feature of the Republic Pneumatic Transmitter.

★ ★ ★

The Republic Transmitter is a pneumatic metering device. It employs the force-balance principle to convert process variables such as flow, liquid level, pressure or liquid density, into air pressures which vary proportionally with the process variables.

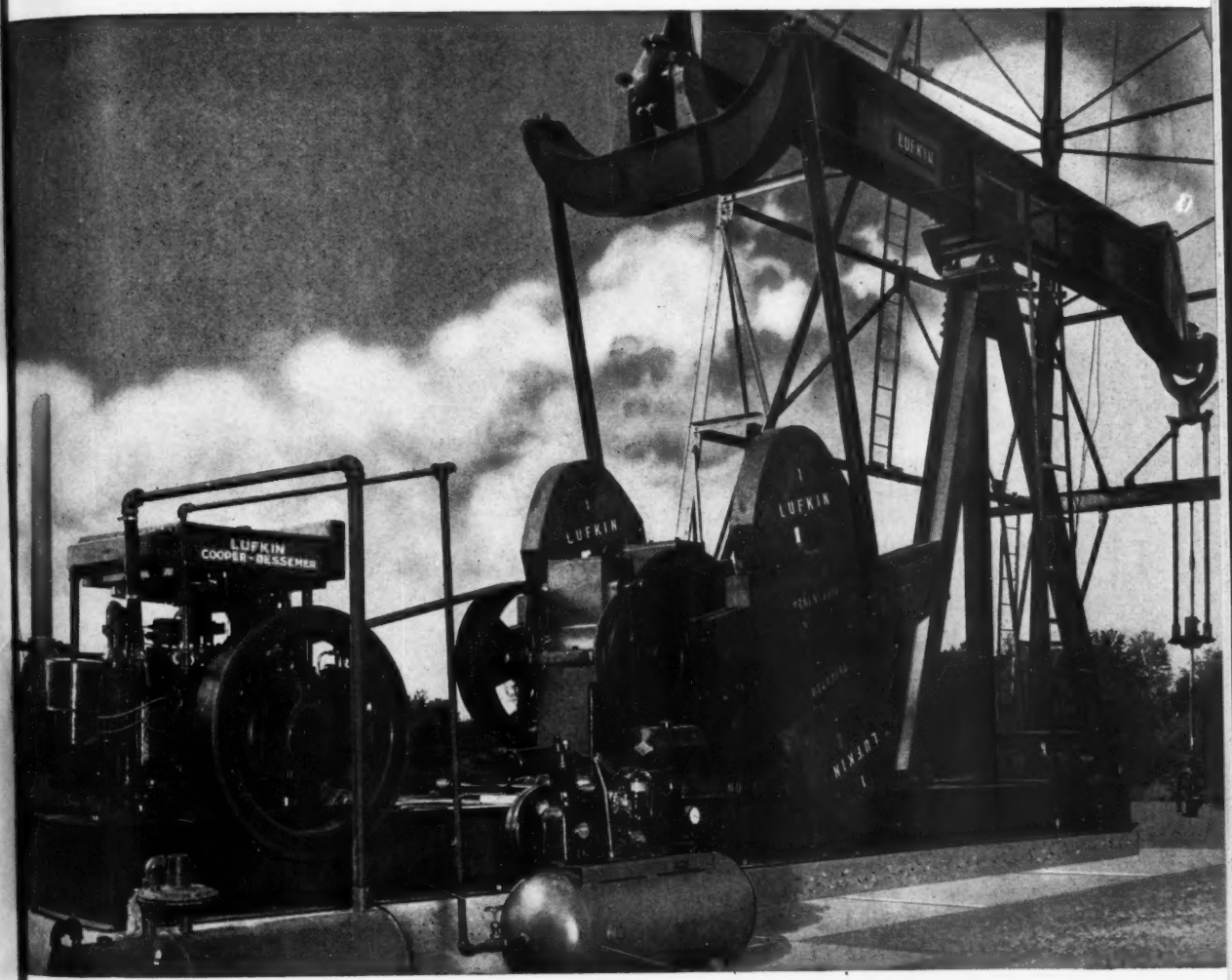
These air pressures become direct measurements and can be conducted to reading instruments or used as the measuring impulse for the actuation of an automatic controller.

For complete details write for Data Book No. 1001

REPUBLIC FLOW METERS CO.

2240 Diversey Parkway, Chicago 47, Illinois

LUFKIN *Pumping Units*



LWAYS A TOP PERFORMER . . .

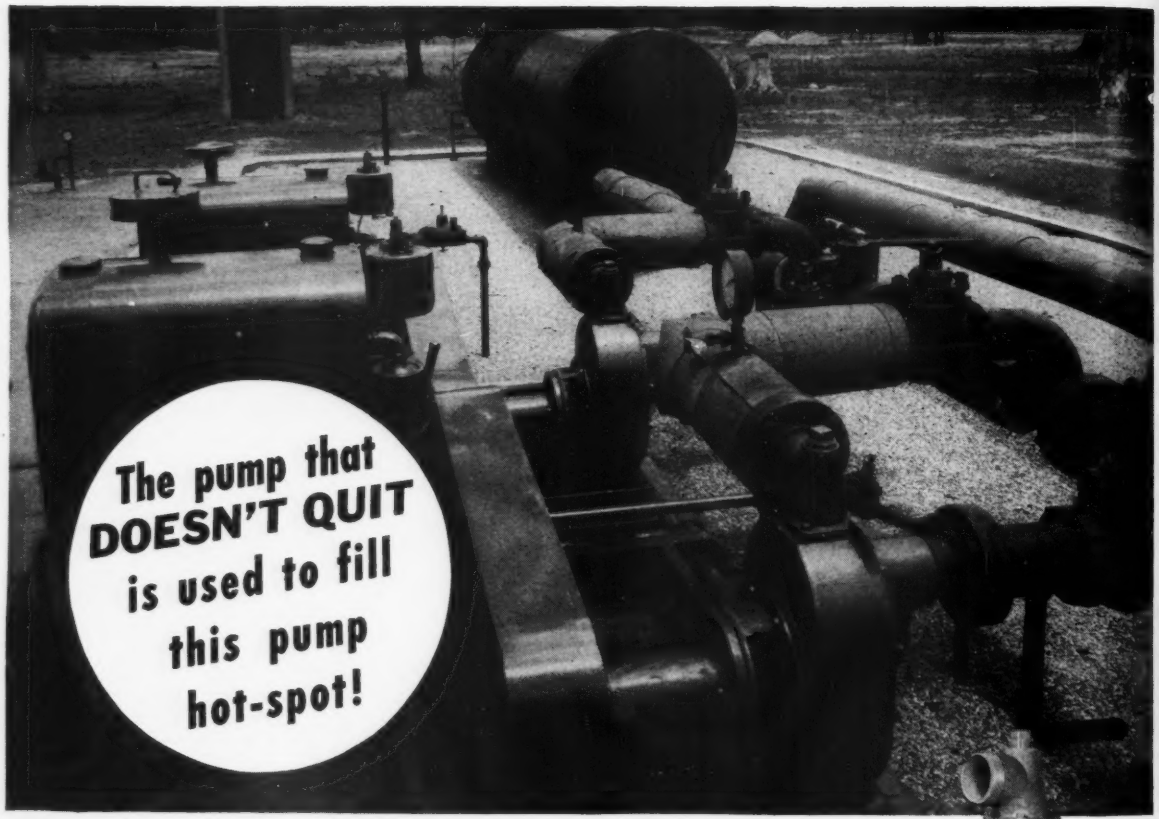
always operating at top efficiency—always low in intenance. You can depend upon Lufkin Units for ng, trouble-free service. Lufkin Units, installed ore than a quarter of a century ago, are still per- rming daily with hardly any noticeable difference nce original installation.

We manufacture a full line of commercial speed reducers and increasers. More than 60,000-sets have been produced in our Lufkin plant. Send for catalog today.

UFKIN FOUNDRY & MACHINE COMPANY

LUFKIN, TEXAS

nch sales and service Houston, Dallas, New York, Tulsa, Los Angeles, Seminole, Oklahoma City, Corpus Christi, Odessa, Kilgore, Wichita Falls, Conroe, Wyoming, Grand Rapids



THE job of circulating hot water for an indirect emulsion heater is a hot spot for a pump. It is one oil country service in which pumping can never be faulty or inefficient. Temperatures of the treating tank *must* be kept uniform by a constant hot water flow.

In this treating installation at Ville Platte, Louisiana, two belt-driven Marlow Self-Priming Centrifugal Pumps, Model 34, are used by Continental Oil Company to handle this critical operation. It is one of four such crude oil emulsion heater systems on Continental leases in the Ville Platte area . . . and Marlows are used in them all.

The main reasons? Smooth, uninterrupted flow is assured with a Marlow Self-Priming Centrifugal — the pump that doesn't stop pumping. There is nothing to manipulate. No parts to jam or cause trouble. A Marlow's capacity can easily be varied for temperature regulation by simple valve control of water flow to the pump's suction inlet, the power unit being set at a constant economical speed. If water flow should be interrupted, when it resumes, the Marlow will automatically continue its smooth, even discharge.

There are a number of other reasons. Ask about them all at your nearest Marlow dealer.

MARLOW MODEL 34 EB SELF-PRIMING CENTRIFUGAL

Marlow pumps are ideal for many oil country jobs. Sizes 1½- to 10-inches, capacities 50 to 4,000 GPM. High- and standard-pressure. Base mounted or steel or pneumatic wheels. Gasoline, Diesel, electric or belt-driven. All ruggedly constructed and guaranteed to prime automatically on suction lifts as high as 25-feet.

Ask for your free copy of the Marlow Oil Country Pumps Selection Guide.

MARLOW PUMPS · RIDGEWOOD, N. J.

SOUTHWESTERN OFFICE: 226 EAST 4th STREET, TULSA 3, OKLAHOMA · PHONE 5-5668

Manufacturers of Quality Pumps Since 1924

- WALLS OF UNIFORM THICKNESS
- SMOOTH INNER SURFACES
- PRECISION FORMED TRUE ANGLES — RADII — CIRCULARITY
- PRECISION CUT BEVEL ENDS
- CONTROLLED GRAIN STRUCTURE OF METAL —STRESS RELIEVED
- STRENGTH WITH MINIMUM WEIGHT

all of these advantages · PLUS

... Globe's precision process production from Globe seamless steel tubes to Globe Welding Fittings

All of these advantages are yours in Globe Welding Fittings. Globe's metallurgical experience and highly specialized production and processing facilities are utilized beginning with the production of Globe seamless steel tubes and continuing through every step to the finished Globe welding fittings.

There's plus value in Globe Welding Fittings — send for the catalog.

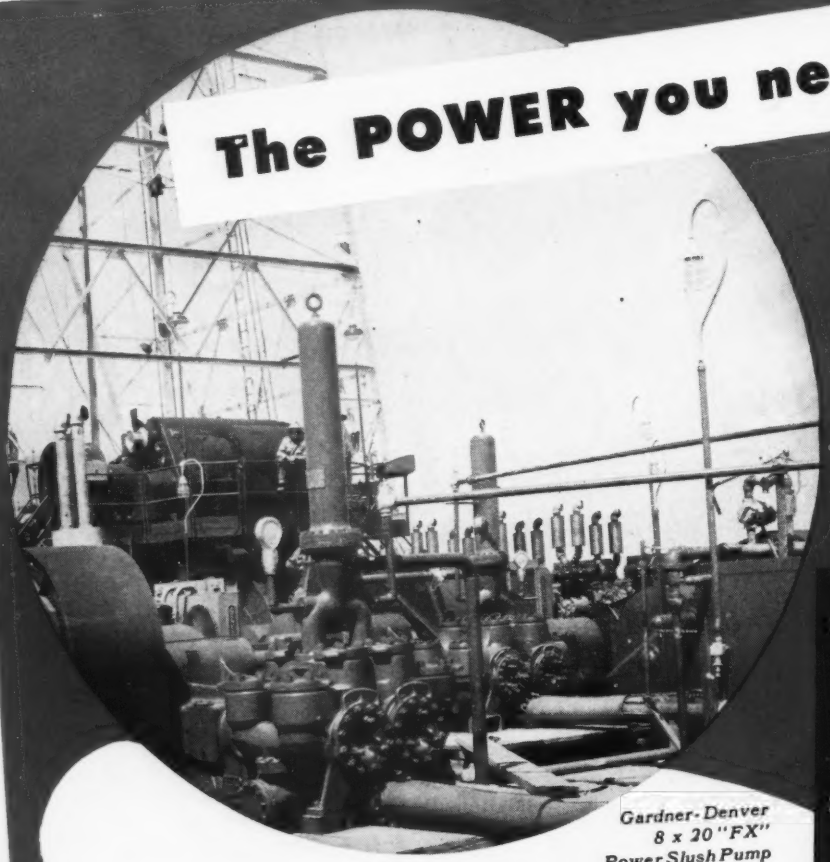
GLOBE STEEL TUBES CO.
Milwaukee 4, Wisconsin

Producers of Globe seamless stainless steel tubes — Gloweld welded stainless steel tubes — carbon — alloy — seamless steel tubes — Globeiron seamless high purity ingot iron tubes — Globe welding fittings.

GLOBE
PRECISION PROCESS
WELDING FITTINGS

DISTRIBUTORSHIPS AVAILABLE
Distributors are invited to write for complete information and details

The POWER you need...



Gardner-Denver 8 x 20 "FX" Power Slush Pump

for heavy mud... high pressures!

That's what you get with a Gardner-Denver "FX" Power Slush Pump. And that's why experienced oil men depend on "FX" pumps for today's deeper drilling jobs. They know that heavy muds and higher pressures demand a pump with a reputation for strength and stamina. A glance at the features listed will show why Gardner-Denver power pumps have that reputation.

- Famous Gardner-Denver divided fluid end construction—cast of GarDurloy Alloy—developed especially for mud pumps.
- Rugged, one-piece double wall main frame—provides greater resistance to shock loads.
- Automatic, controlled lubrication to power end working parts; grease packed Jackshaft roller bearings have pressure gun connections outside the frame.
- Continuous tooth-type Herringbone main gear and drop forged pinion.

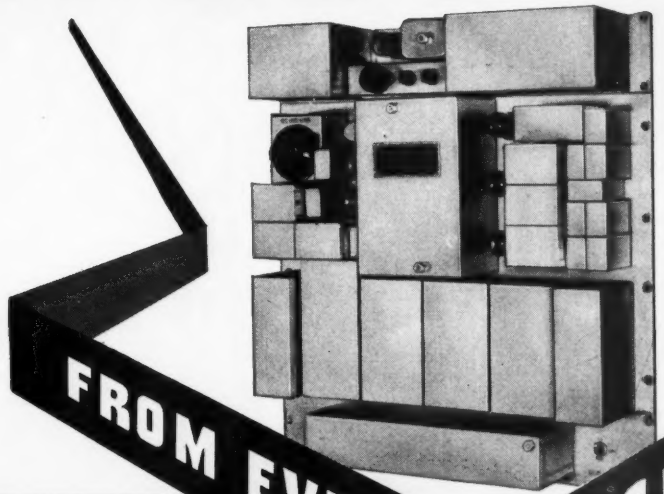
For complete information, write Gardner-Denver Company, Quincy, Illinois.

USE ONLY GENUINE GARDNER-DENVER PARTS

GARDNER-DENVER *Since 1859*

Dallas • Houston • Tulsa • St. Louis • Los Angeles • San Francisco
New York • Chicago • Pittsburgh • Denver • New Orleans
Continental Supply Co., Continental Bldg., Dallas, Tex.
Republic Supply Co. (of Calif.), 2122 E. 7th Street, Los Angeles, Calif.

DEPENDABLE



FROM EVERY ANGLE ...Kellogg Carrier

NEEDS ALMOST NO MAINTENANCE

—except occasional replacement of a vacuum tube. The Kellogg Carrier is soundly designed to give trouble-free service.

REMAINS CONSTANT IN OPERATION

Built with high-quality components that resist humidity and heat, the Kellogg Carrier gives consistently dependable operation without adjustments under all conditions.

MANUFACTURER GUARANTEES PERFORMANCE

Kellogg, with years of experience in the Independent telephone equipment field, stands behind its products at all times.

EASY TO INSTALL AND ADAPT TO ALL REQUIREMENTS

All adjustments except voice and carrier output-level pre-set at factory. Mounts on any 19" rack, needs no oscillator synchronization, no frequency adjustments in the field. And the Kellogg No. 5A Carrier is designed on a flexible "unit" basis, for easy adaptation to various applications. Adding a second channel requires only a few external connections. (Models available, too, to meet every service need.)

GIVES LONG-HAUL PERFORMANCE AT SHORT-HAUL COST

The Kellogg No. 5A Carrier provides a 6db talking circuit over a circuit 30db long (measured at 11-KC). Thus, operation is possible through substantial lengths of high loss cable, such as 22-ga. exchange cable. Also, because this carrier can work over circuits which are long electrically, it does not usually require impedance matching devices for reducing reflection losses caused by junction of open wire and cable.

SAVES CONSTRUCTION COSTS, IMPROVES TRANSMISSION QUALITY

This single-channel carrier system permits transmission of two conversations simultaneously over a two-wire metallic circuit. Handles double traffic—*without* the expense of added lines, extra maintenance or heavier poles. This means a real saving, when you consider the cost of material and manpower today. Improves transmission quality too, by eliminating powerline hum.

***SEND COUPON FOR FULL DETAILS* TODAY!**

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

CARRIER

6650 SOUTH CICERO AVENUE • CHICAGO

KELLOGG SWITCHBOARD & SUPPLY COMPANY
6650 So. Cicero Avenue
Chicago 38, Illinois
Please send complete data on your carrier systems:

NAME:_____

ADDRESS:_____

CITY:_____ STATE:_____

America's Choice

CHEVROLET ADVANCE-DESIGN TRUCKS

for All-Around Value!

Ask the experts—

If you ask the drivers, they'll say:

"Chevrolet Advance-Design Trucks can and will take it day after day, month after month. They're easy to handle . . . built with driver safety and comfort in mind."

The mechanics insist:

"Chevrolet trucks last longer because they're designed, engineered and built for the job. They're easier to work on . . . built with an eye to economical maintenance."

The owners will tell you:

"Only Chevrolet has the TRIPLE ECONOMY of low cost operation . . . low cost upkeep . . . and the lowest prices in the entire truck field."

CHEVROLET MOTOR DIVISION, *General Motors Corporation*, DETROIT 2, MICHIGAN

Only the Leader—Chevrolet has all these features:

NEW CHEVROLET 4-SPEED SYNCHRO-MESH TRUCK TRANSMISSION

A special feature in one-ton and heavier duty models that assures new operating ease and efficiency.

THE CAB THAT "BREATHES"

Here are the trucks with the famous cab that "breathes"! Outside air is drawn in and used air is forced out! Heated in cold weather.*

FLEXI-MOUNTED CAB

Chevrolet's Advance-Design Cab is mounted on rubber, cushioned against road shocks, torsion and vibration.

IMPROVED VALVE-IN-HEAD ENGINE

The world's most economical engine for its size now has greater durability and operating efficiency.

SPLINED REAR AXLE HUB CONNECTION

Greater strength and durability in heavy-duty models with this exclusive Advance-Design feature.

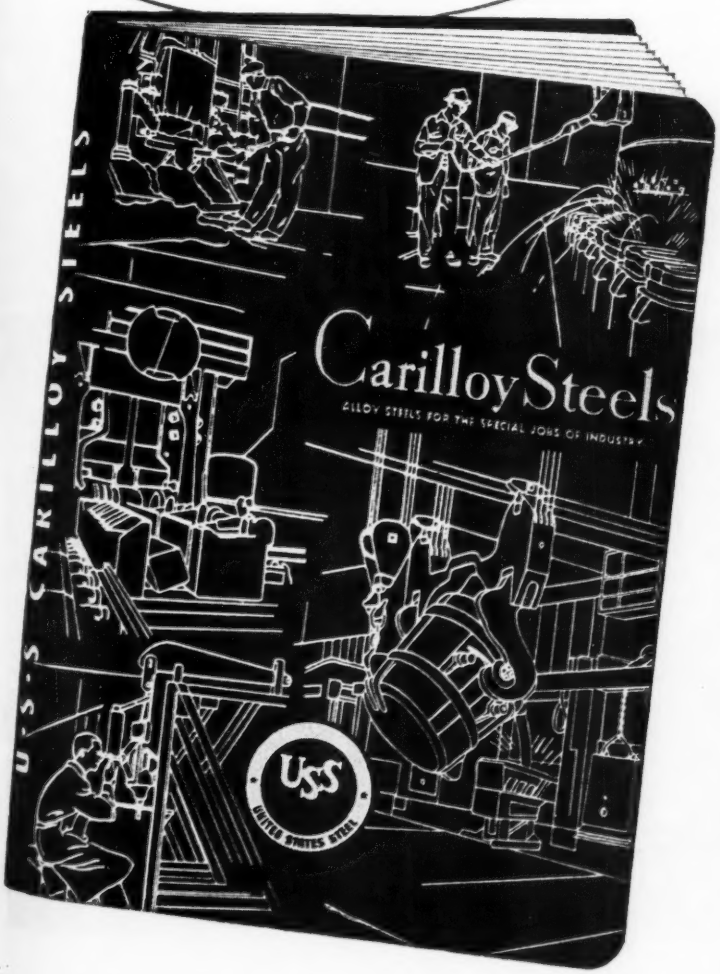
PLUS Uniweld, all-steel cab construction • New, heavier springs • Full-floating hypoid rear axles on ¾-ton and heavier duty models • All-round visibility with rear corner windows* • Specially designed brakes • Hydrovac power brakes on two-ton models • Ball-bearing steering • Double-line pre-selective power shift in 2-speed axle at extra cost on two-ton models • Wide base wheels • Standard cab-to-axle-length dimensions • Multiple color options.

**Heating and ventilating system and rear corner windows with de luxe equipment options at extra cost.*

CHEVROLET

CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED

A NEW BOOK *to help you use alloy steels more efficiently*

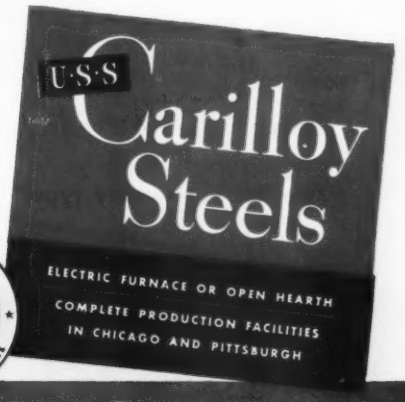


- Here are 176 pages packed with practical information that will make the selection, heat-treatment and application of alloy steel easier and simpler.

In this book are clearly and simply described the facts it will pay you to know about today's alloy steels. For example:

- **How alloying elements affect the microstructure and properties of steel—depicted as Isothermal Transformation Diagrams (S-curves).**
- **Correlation of Isothermal Transformation Diagrams and Continuous Cooling Diagrams with end-quench hardenability test data.**
- **The use of H-Steel hardenability bands and hardenability conversion charts for determining the proper selection of steels to meet various requirements.**
- **How to calculate hardenability from chemical composition and grain size when test data is lacking.**
- **Mechanical properties of the more commonly used alloy steels.**
- **Properties of various alloy steels at elevated temperatures as regards tensile strength, creep strength and rupture strength.**
- **Practical heat treatment based on "S"-curve information; also up-to-the-minute data on normalizing, annealing, quenching and tempering, on Austempering, Martempering and U·S·S Improved Heat Treatment.**
- **Quick-reference charts covering principal applications of constructional alloy steels in various industries; also tables of useful information including critical temperatures—functions of the steel making elements—latest list of A.I.S.I. — S.A.E. standard constructional alloy steels.**

This book is free. If you have not already received a copy, simply write us on your company letterhead, and we will forward one to you. (Please indicate your official connection). For prompt reply, address —Carnegie Illinois Steel Corporation, Room 2018-G Carnegie Building, Pittsburgh, Pa.



CARNEGIE-ILLINOIS STEEL CORPORATION

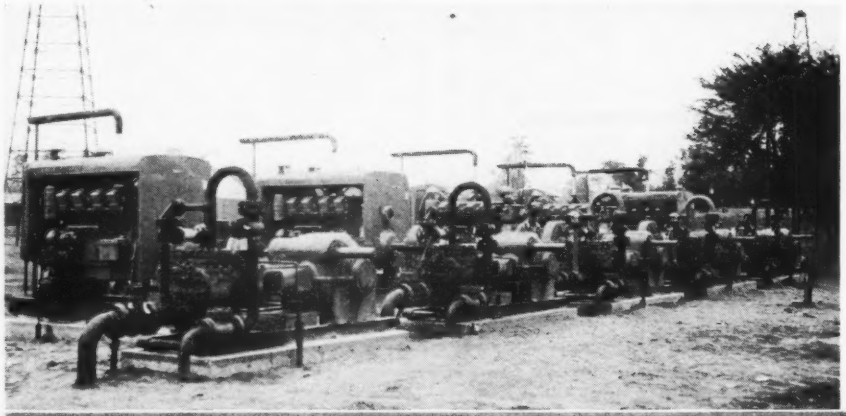
Pittsburgh and Chicago

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
Tennessee Coal, Iron & Railroad Company, Birmingham, *Southern Distributors*
United States Steel Supply Company, *Warehouse Distributors—Coast to coast*
United States Steel Export Company, New York

USS STEEL — UNITED STATES STEEL

UNITED STATES STEEL

TRANSIT *Field & Pipeline* PUMPS



Five

6 x 10s

on this

— East Texas main crude oil line —

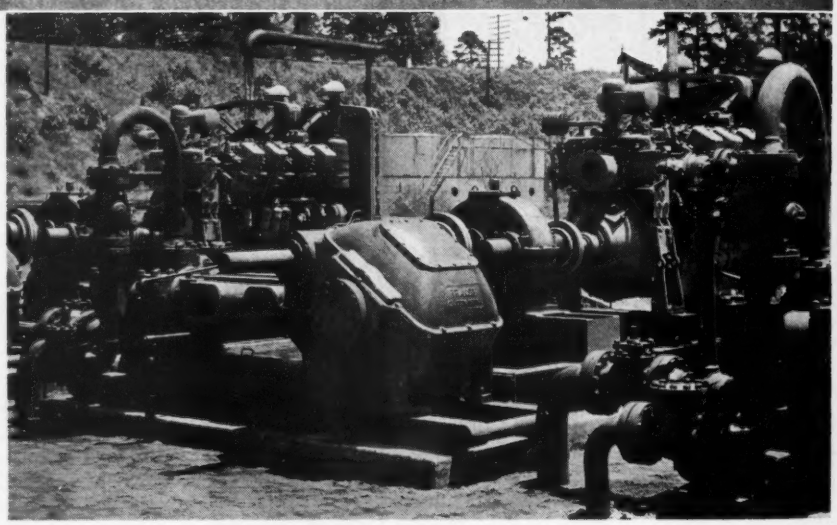
pump 1800

barrels of oil

per hour at

400 to 450

pounds pressure



Transit Side Pot Power Pumps for Oilfield & Pipeline Service are built in sizes from 2½ x 6 to 7 x 10.

Adaptable to many types of drive. Pumping Units can be furnished with skids for Portability.

Ask for Bulletin 3082

NATIONAL TRANSIT PUMP AND MACHINE CO.

Home Office and Works, OIL CITY, PENNA. Mid-Continent Warehouse, 318 East Archer Street, TULSA, OKLA.

NEW YORK · PHILADELPHIA · CHICAGO · CLEVELAND · PITTSBURGH · LOS ANGELES · HOUSTON · TULSA

Allied Supply Company, 2068 East 37th Street, Los Angeles, California

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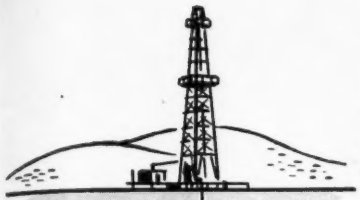
Eugene V. Winter Co., 15 Drumm Street, San Francisco, California

Standard Supply and Hardware Company, 822-838 Tchoupitoulas St., New Orleans, Louisiana

Reeves & Skinner Machinery Co., 2211 Olive Street, St. Louis, Missouri



Exact positioning of the Johnston All Purpose Gun Perforator in the formation to be perforated is easily and accurately determined by actual pipe-in-the-hole tally. No re-rigging or extra equipment necessary . . . just run in the Gun Perforator assembled on the bottom joint of tubing or drill string and when the desired depth for perforation is reached, the Gun Perforator is fired by safe, positive top-hole manipulation of the pipe string, which permits the hydrostatic pressure in the hole to actuate the firing mechanism. Simple, accurate and efficient.

SAFER Gun Perforating operations because the Firing Head will not fire until subjected to *both* in-the-hole hydrostatic pressure and definite rotary and vertical manipulation of the pipe string.

POSITIVE FIRE of all projectiles is assured by the foolproof firing-head mechanism and the flash-hole design of the Johnston Perforating Gun Bodies.

SELECTED NUMBER OF PERFORATIONS is determined by the number of four, five or six-shot Perforating Gun Body Sections attached to the Firing Head.

EASIER, FASTER Gun Perforator maintenance is made possible by a minimum number of parts in the trouble-free construction of the complete Gun Perforator assembly.

A MINIMUM OF EXPENDABLE PARTS for each perforating job. No extra equipment other than the Firing Head, the Perforating Gun Body Sections and a minimum of reloading supplies is needed.

Your Pipe-in-the-Hole Tally POSITIONS The Johnston

SHOOT-N-TEST *all Purpose* **GUN PERFORATOR**

PIPE TALLY

No. Joints	Length of Joint Feet	Ins.	TOTAL Feet	Ins.
Kelly				
Float				
Drill Collar				
Reamer				
1				
2				
3				
4				
5				
6				
7				
8				
9				

Write **FOR NEW DESCRIPTIVE FOLDER!**

THE "SHOOT-N-TEST" FOR PERFORATING CASING and TESTING FORMATION IN ONE RUN

By unitizing the Johnston Gun Perforator with *your* regular Johnston Formation Tester and Pressure Recorder, any designated formation can be *both* perforated *and* tested in one round trip of tubing or drill string. A quick, efficient method of obtaining water shut-off information, doing exploratory work or testing for actual production.

SHOOT-N-TEST FORMATION AND CASING TESTING Trademark

M. O. JOHNSTON OIL FIELD SERVICE CORP.
3035 Andrita Street, Los Angeles 41, California
"Servicing California-Permian Basin-Rocky Mountain Areas"

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Positive, Powerful Performance WITH GENERAL CONTROLS HYDRAMOTOR* VALVES

HYDRAMOTOR* (Trademark Registered) means the application of powerful hydraulic pressure generated by an electric motor driven pump to open the valve.

All operator parts of this powerful motor valve are *sealed in oil for life*, thus insuring efficient trouble-free service. ELECTRO-HYDRAULIC OPERATION insures positive opening or closing, even at highest rated pressures and against heavy viscous fluids. POSITIVE RETURN TO NORMAL POSITION ON CURRENT FAILURE...SIMPLIFIED TWO-WIRE CONTROL CIRCUIT.

Available in normally closed or open models—single seated or semi-balanced—½" to 12" I.P.S. —Models up to 3000 P.S.I.

For the control of heavy liquids and oils as well as all gases in various installations in oil refineries, chemical plants, food processing and innumerable other industrial and commercial applications.

For complete specifications covering the GENERAL CONTROLS broad line of *Automatic Pressure, Temperature, Level and Flow Controls*, request new Catalog.

GENERAL CONTROLS

Manufacturers of Automatic Pressure, Temperature, Level & Flow Controls

FACTORY BRANCHES: Birmingham (3), Boston (16), Chicago (5), Cleveland (15), Dallas (2), Denver (10), Detroit (8), Glendale (1), Houston (6), Kansas City (2), New York (17), Oklahoma City (1), Philadelphia (40), Pittsburgh (22), San Francisco (7), Seattle (1), St. Louis (12) • **DISTRIBUTORS IN PRINCIPAL CITIES**

52-1

3 out of every 5 are 'Repeats'

Out of every five Bucyrus-Erie Spudders sold, at least three go to customers who have used these versatile rigs before — and the remaining machines win new friends who nearly always come back to buy more.

Let this proved performance make money for you on your drilling and servicing jobs. Bucyrus-Erie Company, South Milwaukee, Wisconsin.

C. E. Hipp, veteran drilling and servicing contractor of Graham, Texas, currently has four Bucyrus-Erie spudders working and four on order. The rig shown is a semi-trailer mounted 48-L with auxiliary derrick leg which gives the machine capacity for handling static casing loads up to 120,000 pounds.

BUCYRUS ERIE

See for Yourself

Check with your nearest Bucyrus-Erie Spudder Distributor. He'll tell you where you can watch a Bucyrus-Erie Spudder in action.

41548

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THE CITY NATIONAL BANK

OF HOUSTON

Condensed Statement of Condition As of the Close of Business December 31, 1948

RESOURCES

Cash and Due from Banks	$62,005,727.79	
U. S. Government Bonds	55,272,473.10	
Municipal Bonds & Warrants	702,015.05	
Federal Reserve Bank Stock	240,000.00	$118,220,215.94
Loans and Discounts	44,313,421.65	
Commodity Loans Secured by Warehouse Receipts	4,457,623.32	48,771,044.97
Bank Premises	4,000,000.00	
Furniture and Fixtures	1.00	4,000,001.00
Interest on Securities and Other Income Earned—Not Collected		151,234.71
Customers' Liability on Letters of Credit		9,018,530.97
TOTAL RESOURCES		$180,161,027.59

LIABILITIES

Common Stock	$4,000,000.00	
Surplus	4,000,000.00	
Undivided Profits	1,929,200.37	
TOTAL CAPITAL ACCOUNT		$ 9,929,200.37
Reserve Accounts		648,865.98
Liability on Letters of Credit		9,018,530.97
DEPOSITS:		
Individual	$126,569,074.33	
Banks	33,219,874.36	
Government	775,481.58	160,564,430.27
TOTAL LIABILITIES		$180,161,027.59

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Simplify valve selection...

WITH THIS

LUNKENHEIMER

"RENEWO" THREESOME!

The "RENEWO" Threesome is fully described in Circular No. 577, which also explains the economy feature of converting one type to another by simply changing seat and disc. A copy is yours for the asking . . . from your Lunkenheimer Distributor or from us direct.

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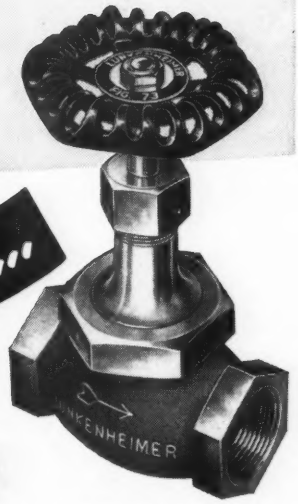
YOUR LUNKENHEIMER DISTRIBUTOR . . .

Provides Better Valve Service . . . Lunkenheimer Distributors are located in the principal industrial centers. There is one near you, fully equipped and ready at all times to assist with your maintenance and operation problems. Call on him.

1 REGULAR TYPE...

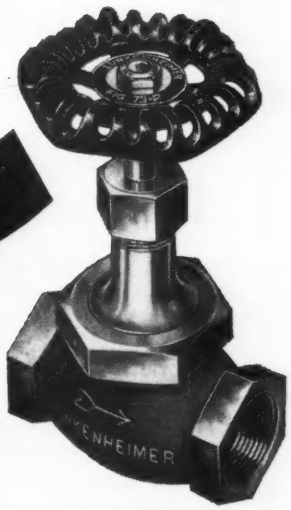


Nickel Alloy Seat and Disc

Fig. 73 200 lb. S.P.
Fig. 16 300 lb. S.P.

Regular "RENEWO": one of the most popular and widely used valves ever designed for general service. As the name clearly implies, all parts are renewable.

2 "P" TYPE...

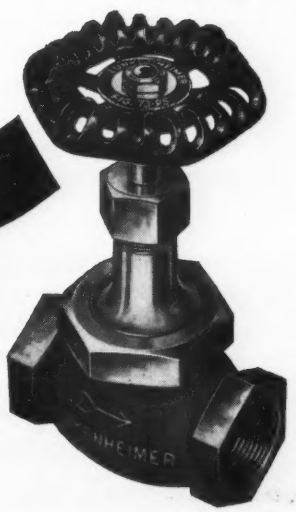


Nickel Alloy Seat and Disc

Fig. 73-P 200 lb. S.P.
Fig. 16-P 300 lb. S.P.

"P" (Plug Type) "RENEWO": for throttling, drain, drip water column blowdown and similar service. The "N55" Nickel Alloy 330 Brinell sealing material, developed and patented by Lunkenheimer, has exceptional wearing qualities and high corrosion resistance.

3 "PS" TYPE...



Stainless Steel Seat and Disc

Fig. 73-PS 200 lb. S.P.
Fig. 16-PS 300 lb. S.P.

"PS" (Plug Type) "RENEWO": for maximum resistance to the effects of close throttling and other severe service, particularly where abrasive conditions are encountered. Equipped with stainless steel 500 Brinell seat and disc.

MATCHED ACCURACY

... means fast make-up!

REPUBLIC ELECTRIC WELD CASING AND TUBING . . . speed make-up and running of strings. Threads are clean and full-formed—accurate in size, depth, lead and taper—sized to insure proper stand-off. Couplings are threaded with equal care and accurately matched. As a result, joints stab, spin-in and tong-up *fast*.

And, because these modern tubular products are uniformly round and uniform in wall thickness, thread cutting leaves plenty of tough steel under the root line to guard against pull-outs.

Uniform roundness helps guard against collapse, too, by combining with high ductility steel, fully normalized for uniform structure and cold sized for high yield strength.

For fast make-up . . . plus positive hole protection . . . always specify Republic Electric Weld Casing and Tubing. Millions of feet have demonstrated that they're more than a match for every job they've been called upon to do.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • • • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, New York

Republic Electric Weld Casing and Tubing are made from flat-rolled steel, both sides of which are inspected. Thus, the surface which becomes the inside wall is free from hidden defects.

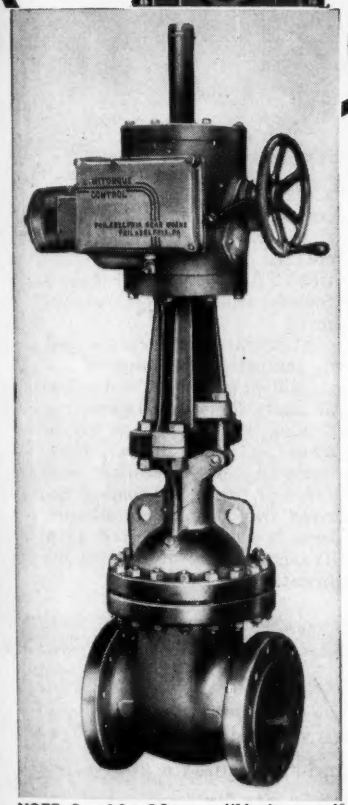
REPUBLIC *Electric Weld* **NORMALIZED CASING AND TUBING**

REPUBLIC STEEL
REG. U.S. PAT. OFF.

Other Republic Products include Line Pipe—Carbon, Alloy and Stainless Steels—Upson Studs, Bolts and Nuts—Electrunite Heat Exchanger Tubes

POSITIVE, SAFE AND AUTOMATIC

Push-Button CONTROL OF VALVES BY Limitorque



NOTE: Send for 90 page "Limitorque" Catalog—and please use your Business Letterhead when requesting same

-has been installed in the following Petroleum Refineries and Pipe Lines

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PIPE LINES:

Big Inch Pipe Line . . . Creole Petroleum Corp. . . . Gulf-Kuwait Pipe Line . . . Little Inch Pipe Line . . . Magnolia Pipe Line Co. . . . Portland Pipe Line Co. . . . Sohio Pipe Line Co. . . . Stanolind Pipe Line Co. . . . Texas-Empire Pipe Line Co. . . . Texas Pipe Line Co. . . . Trans-Arabian Pipe Lines Co.

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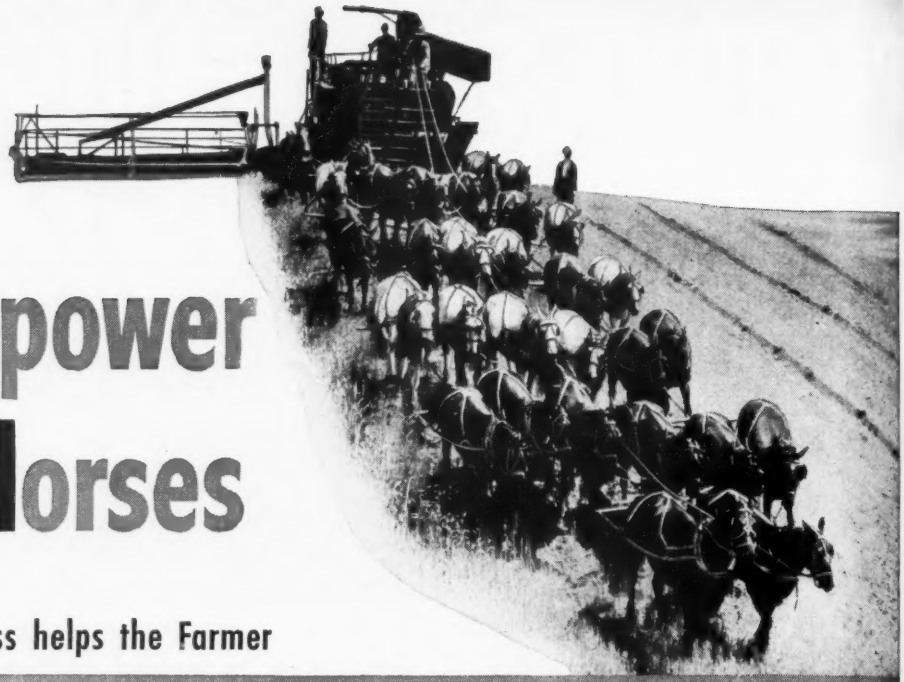
Industrial Gears and Speed Reducers
LimiTorque Valve Controls



Horsepower without Horses

Petroleum Progress helps the Farmer

DOBBIN yields to the tractor to increase farm food production. Last year America's farmers used over 3 billion gallons of tractor fuel alone, not counting fuels for trucks and other equipment.

Many farm products are used *by* the petroleum industry . . . 20 million pounds of beef tallow annually for steam locomotive driving rod and axle grease alone . . . also lumber, fibre, paint materials, leather and other products. A chemical derived from oat hulls and corn cobs is extensively used in a Texaco method of refining lubricating oils.

Texaco representatives in all 48 states help farmers with their lubrication problems.

• In the farm field Texaco research and engineering have provided, (1) quality fuels and lubricants for automotive equipment, (2) quality lubricants for farm machinery, (3) rustproof compounds to protect against deterioration of equipment, (4) a nation-wide educational program to enable farmers to get the most out of farm machinery in every type of farming.

THE TEXAS COMPANY

Petroleum Promotes Progress

PLENTY OF BRASS CONDENSER TUBES ON HAND—

at Metal Goods warehouses strategically located in the center of the Midwest and Gulf Coast refining industry.

We have a complete stock of Condenser Tubes and Sheets all ready for delivery—day or night: the largest stocks of Arsenical Admiralty and Aluminum Condenser and Heat Exchanger Tubes in the Southwest . . . Alclad Aluminum for Baffle Plates, Tube Sheets and Tie Rods . . . Naval Brass and Muntz Metal for Tie Rods, Baffle Plates and for brazing on Steel Tube Sheets.

Rejuvenate Your Corroded Pumps!

We carry a full line of hard drawn brass pump liner stock—⅛" wall, from 1¾" to 6" I. D. for relining reciprocating pump cylinders; also heavy wall centrifugally cast liner stock.

Prompt Mill Shipments on Tubes, Tube Sheets and Baffle Plates of:
STAINLESS STEELS • MONEL • NICKEL • INCONEL • ALUMINUM • 70/30 SUPER-NICKEL • 80/20 CUPRO-NICKEL • AMBRALOY 927 • DUPLEX TUBES (Any combination of these metals or steel and alloy.)

NEED TECHNICAL HELP?
Expert advice on corrosion by water or hydro-carbons and "tough bundle" problems is yours for the asking.

METAL GOODS CORPORATION MGC QUALITY METALS

METAL GOODS CORPORATION

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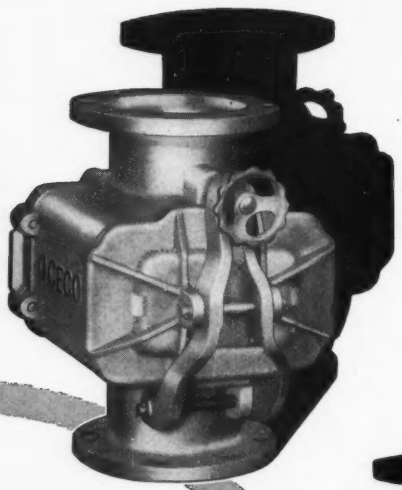
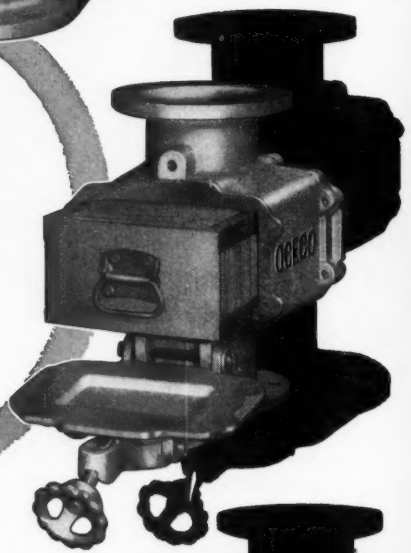
Oceco 2" Flame Arrestor Showing Screw Mounting and Side Hinge.



Oceco 6" Flame Arrestor Showing Flange Mounting and Bottom Hinge.

Below—View of Oceco Type "F" Fixed Bank.

OCECO
FLAME ARRESTORS
for outstanding performance

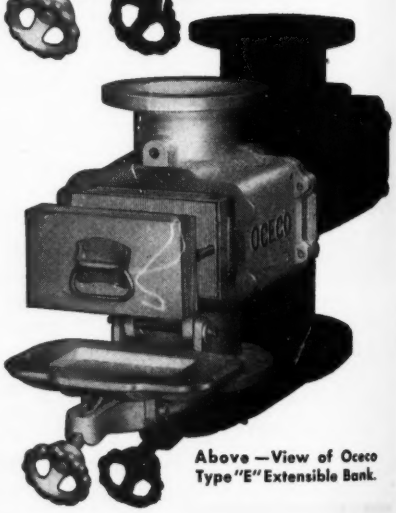


● Oceco Flame Arrestors—have won outstanding recognition throughout the entire petroleum industry. They combine the desired flame stoppage and explosion prevention with minimum pressure drop.

Housings and covers are semi-steel castings, with high melting point and consequently provide substantial heat resistance and protection to the flame arrestor "bank", even when subjected to the intense heat of sustained fire.

The "banks" consist of flat and corrugated sheets of high purity, corrosion resisting aluminum arranged alternately to form vertical straight through passages. They are of sufficient depth, top to bottom, to resist "burning through",—and the straight through passages minimize depositing of moisture and clogging;—and simplify inspection.

Furnished in 2" and 3" sizes for screw mounting and 4", 6", 8" and 10" sizes for flange mounting;—with either type "F" fixed banks, or type "E" extensible banks, that permit the plates to be separated for individual cleaning. Send for Bulletin No. 471. It gives full details.



Above—View of Oceco Type "E" Extensible Bank.

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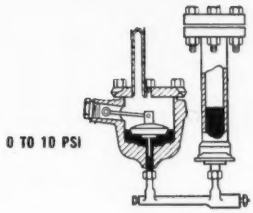
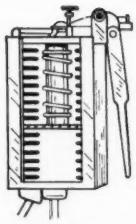


0 TO 10 PSI

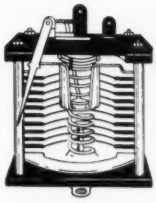
30 TO 10,000 PSI



0 TO 30 PSI
(ABSOLUTE)

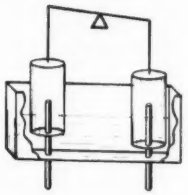
Here's where to start

14 TO 4,000 PSI



10 TO 17 PSI

5 TO 30 PSI



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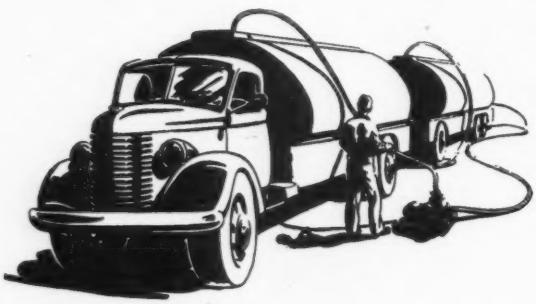

look at this record:

PROBLEM: A Midwest company had to clean the interior of a 3000 gallon insulated asphalt trailer before making welding repairs. About 2 inches of asphalt had to be removed from the bottom of the truck, heating pipes and walls of the trailer.

SOLUTION: The Oakite Man was called in. He dumped in 800 gallons of hot water. Added recommended amount of Oakite Composition No. 19, and mixed into solution. Pump-circulated Oakite cleaning solution from top manhole back through bottom of trailer using flexible steel pipe. Circulated solution 7 hours; drained and then steamed out interiors to remove loosened asphalt.

RESULT: Oakite Composition No. 19 retained potent cleaning strength through entire procedure and easily cut through tenacious deposits. Removed all asphalt without damage to surfaces. Left clean surfaces to facilitate inspection and repair.

Your Cleaning Job Here?

(check it, clip and send to Oakite Products, Inc.)

- ☐ cleaning tank car interiors
- ☐ paintstripping equipment
- ☐ descaling water coolers
- ☐ steam cleaning equipment
- ☐ cleaning fractionating towers
- ☐ descaling debutanizer condensers
- ☐ cleaning heat exchangers
- ☐ cleaning gas coolers
- ☐ cleaning filters

look at these savings:

Former method took two men three to four days of hand chipping at a cost near $128. Specialized Oakite Composition No. 19 and Oakite Method cut that cost about half. And the job was completed in 10 hours.

Chances are Oakite cleaners and methods can solve your cleaning jobs, too. Contact your nearby Oakite Technical Service Representative next time a cleaning problem comes up. Or if you're stumped by one of the jobs at left, check it, clip and send to,

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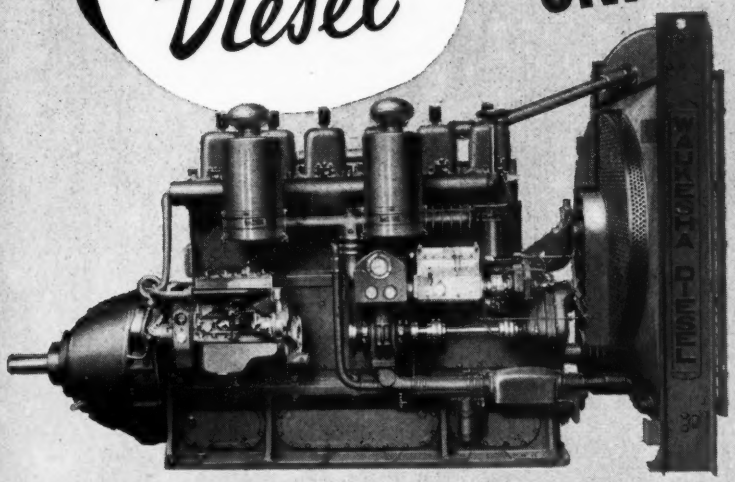
MATERIALS • METHODS • SERVICE

WAUKESHA

6-LRDU Diesel POWER UNIT



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BULLETIN No. 1480

This one is for You

It's another new Diesel power unit—Waukesha's latest and largest, the 6-LRDU—and here's your copy of Bulletin 1480 to tell you all about it...

This heavy-duty unit has a vertical, six-cylinder, four-cycle, solid injection, compression ignition Diesel engine—8½-in. bore x 8½-in. stroke, 2894 cu. in. displacement. Most unique is the patented combustion chamber, which burns all standard "high-speed Diesel fuels" of 45 cetane and above. Within its rated load and speed range combustion is smooth and quiet. No shudder, no smoke, no soot.

The massive graphitic steel crankshaft has seven 5½-in. main bearings. Cylinder block is a single casting; wet sleeve cylinders are hardened to 400 Brinell. American Bosch injection! The large 4-cylinder cranking engine with its 20-30 hp. output, gives easy, speedy starting even in coldest weather. Find out about all this Diesel's special characteristics and its high fuel economy and low maintenance.

Ask for Bulletin No. 1480

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.
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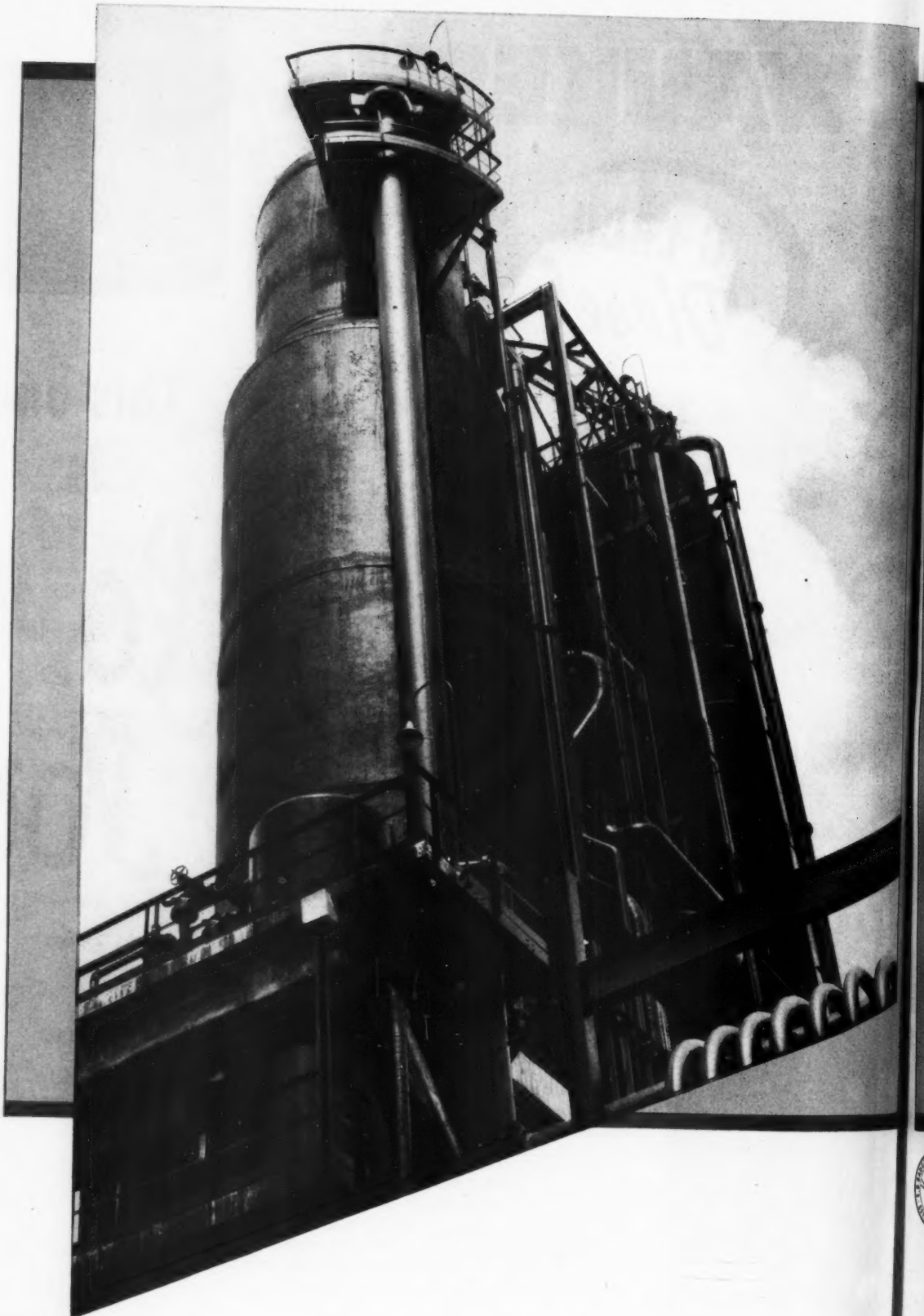

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The capacity of all distillation units designed and constructed by E. B. Badger & Sons Co. totals 4,500,000 barrels a day. If all these units were in the petroleum industry alone, they would provide sufficient capacity to distill over 80% of the national crude oil output.

Actually, of course, these units are at work distilling, separating and refining all sorts of chemical and petroleum products — from glycerin to gasoline, from peppermint oil to phenol, from alcohol to asphalt.

If you are planning plant expansion or new plant construction we invite you to take advantage of the broad process and engineering experience of E. B. Badger & Sons Co. to assure the fast and successful completion of your project.

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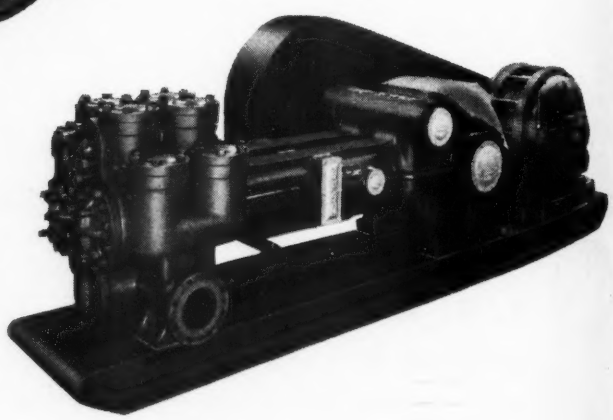

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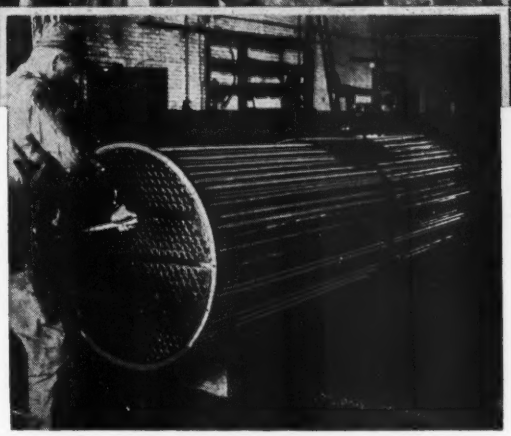
Aerial photograph of the Lawrenceville, Illinois, refinery of The Texas Company. Photo by Chicago Aerial Survey Co.

ARSENICAL ADMIRALTY TUBES

most economical in naphtha heat exchangers

...at *The Texas Company Refinery*



One of four 1,500 sq. ft. bundles tubed with Anaconda Arsenical Admiralty Alloy at the Lawrenceville refinery.

AT THE LAWRENCEVILLE, ILLINOIS, refinery of The Texas Company, Anaconda Arsenical Admiralty Condenser Tubes prove to be the most economical alloy in Griscom-Russell heavy naphtha exchangers on crude pipe still units. Each tube bundle, of which there are four, contains 1,500 square feet of surface. Outer surfaces of the tubes are subjected to the relatively corrosive action of straight run naphtha at about 300° F. Crude oil, which is mildly corrosive under these temperature conditions, is pumped through the tubes.

* * *

Arsenical Admiralty gets the call today in countless heat exchange applications—for one very good reason: The addition of 0.04% arsenic gives Admiralty Alloy high resistance to dezincification. This Anaconda Alloy has set outstanding performance records since its introduction on a commercial basis in 1934.

For more information on Anaconda Tubes and Plates for Condensers and Heat Exchangers, write for Publication B-2. And—feel free to consult our Technical Department on problems involving the use of metal under corrosive conditions. 48148

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THE AMERICAN BRASS COMPANY

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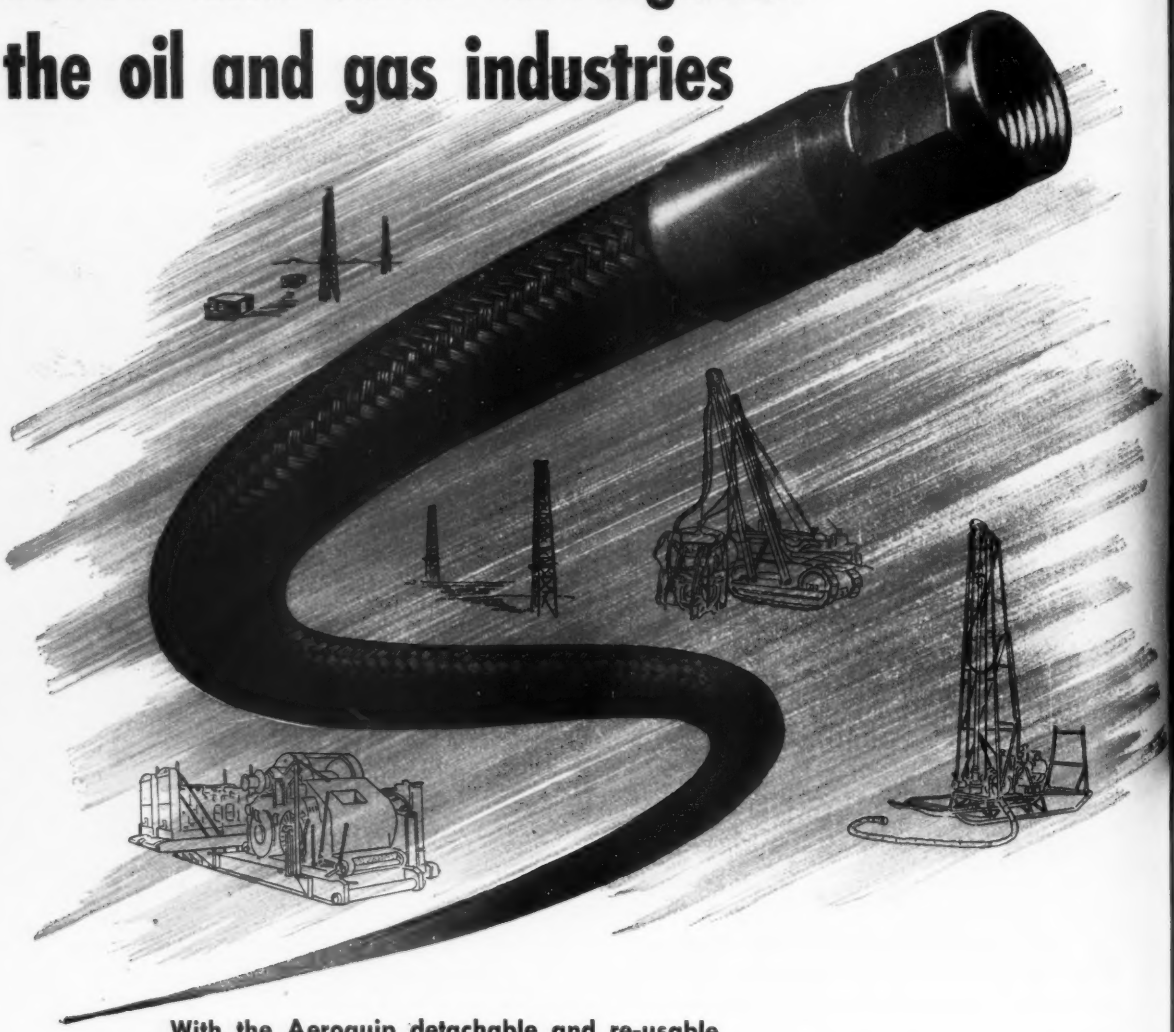
AEROQUIP FLEXIBLE HOSE LINES serve and save throughout the oil and gas industries



With the Aeroquip detachable and re-usable fitting, service and repair are quickly accomplished in the field or on the job and lost time for valuable equipment is kept to a minimum. Reliable operation at high or low temperatures. Eliminate failures due to vibration and prevent leakage.

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Foster Wheeler engineers have collaborated with petroleum refiners for more than 25 years in the design, engineering, fabrication and construction of over 400 petroleum processing units.

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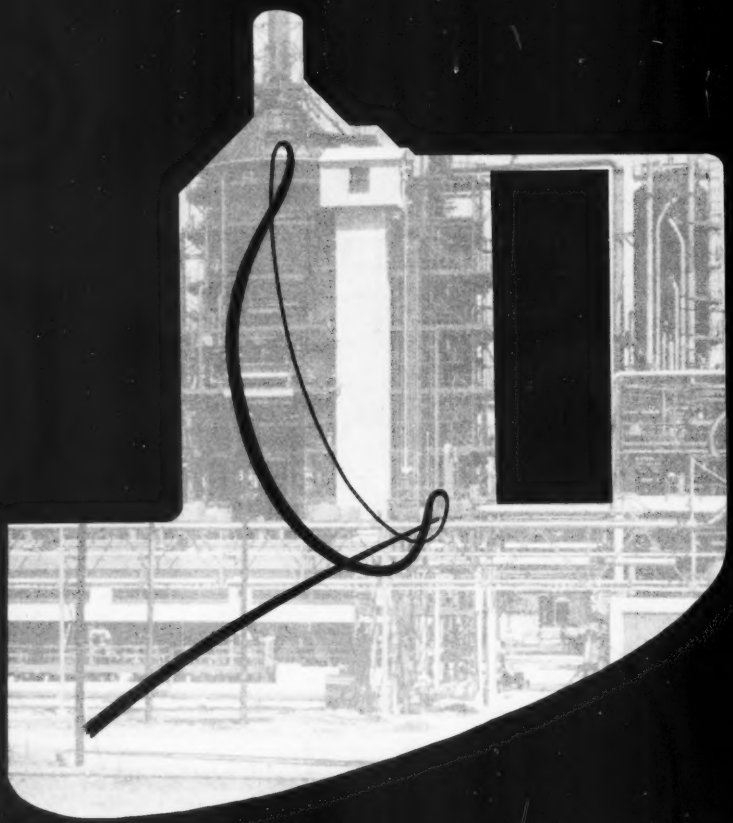
process rhythm



A smooth-running unit — a unit in balance — is one in which all parts are functioning in rhythm. This is possible only when the unit is designed 'right' and built 'right'.

Rhythm (as symbolized by the catalyst flow pattern in the illustration) is an achievement peculiar to the experienced professional . . . to the experienced contractor who knows just what qualities in the basic functions of design, engineering, fabrication and construction produce "process rhythm".

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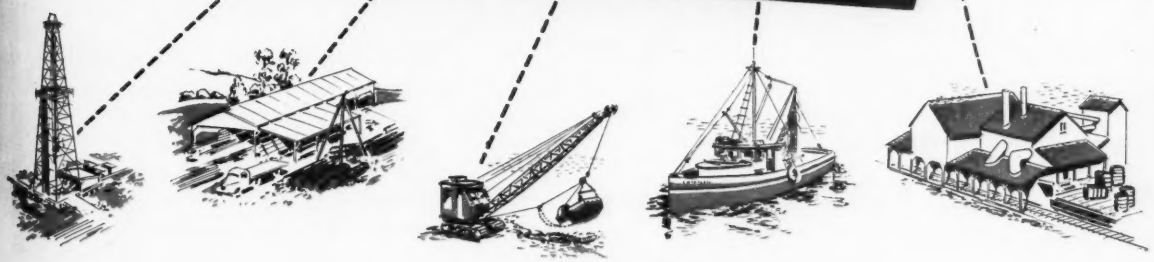

You don't take chances when you buy an engine from Stewart & Stevenson. We sell engines on the basis of doing a certain job—not just delivering a certain horsepower. If the engine fails to perform as specified—and we can't make it do so—it is removed at our expense and your money gladly refunded.

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Today, Chemico helps in the fight to feed the world by designing and supervising the construction of complete plants for the production of nitrogenous fertilizer.

IN INDIA . . . 350,000 tons a year of ammonium sulfate will be produced by a plant at Sindri to be operated by the Indian government.

IN EGYPT . . . every day 550 tons of calcium nitrate will flow from the great plant at Suez . . . to be built for the Societe Egyptienne d'Engrais et d'Industrie Chimiques (S. A. E.).

IN MEXICO . . . 70,000 tons of low-cost ammonium sulfate will flow from a new plant near Mexico City to be built for Guanos y Fertilizantes S. A., Mexico's leading fertilizer manufacturer.

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REPUBLIC NATIONAL BANK
of DALLAS

STATEMENT OF CONDITION DECEMBER 31, 1948

RESOURCES

Cash and Due from Banks	$114,170,071.26
U. S. Government Securities	50,474,612.19
State, Municipal and Other Securities	952,103.57
Stock in Federal Reserve Bank	750,000.00
Loans and Discounts	140,244,077.93
Bills of Exchange and Commodity Loans	32,191,587.46
Bank Premises and Equipment	2,804,664.78
Customers Liability—Acceptances and Letters of Credit	6,626,017.29
TOTAL	$348,213,134.48

LIABILITIES

Capital	$12,000,000.00	
Surplus	13,000,000.00	25,000,000.00
Undivided Profits		2,010,597.78
Reserve for Contingencies		1,768,392.17
Reserve for Taxes, etc.		1,062,696.87
Acceptances and Letters of Credit		6,626,017.29
Deposits:		
Individual	$205,003,207.26	
Bank	103,777,094.29	
U. S. Government	2,965,128.82	311,745,430.37
TOTAL		$348,213,134.48

We are grateful to our many friends in the Oil Industry who have helped make this statement possible.

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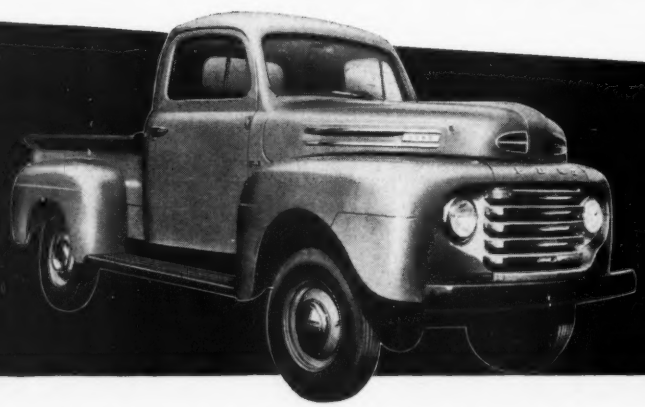
They're New!

They're Big!

Up to 145 H.P.!

Marmon-Herrington
All·Wheel·Drive Fords

Bonus Built
to Deliver
Bonus Performance



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35,000 lbs.
G.V.W.!

Here they are! The newest, finest line of trucks ever built by Ford—and converted to *All-Wheel-Drive* by Marmon-Herrington!

Now there are more models, larger sizes . . . G.V.W. from 4,700 pounds to 35,000 pounds . . . and three great engines—up to 145 H.P.

Yes, there's a Marmon-Herrington *All-Wheel-Drive* Ford with the *right power* and *right capacity* for every difficult trucking need. And, listen to this —Marmon-Herrington converted Fords are the *lowest priced All-Wheel-Drive* trucks on the market!

Just look at the galaxy of big bonus features you find in Marmon-Herrington *All-Wheel-Drive* Fords —*and only in them:*

- 3 Great Engines—95, 100 and 145 H.P.
- Strong, Rigid Frames.
- Big, Husky Axles—Front and Rear.
- Two-Speed, Gear-Driven Auxiliary Transmissions on Units of One Ton and Over.
- Up to Ten Forward Speeds—Two Reverse Speeds.
- Low Final Reductions for Heavy Pulling.
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- Low Center of Gravity.

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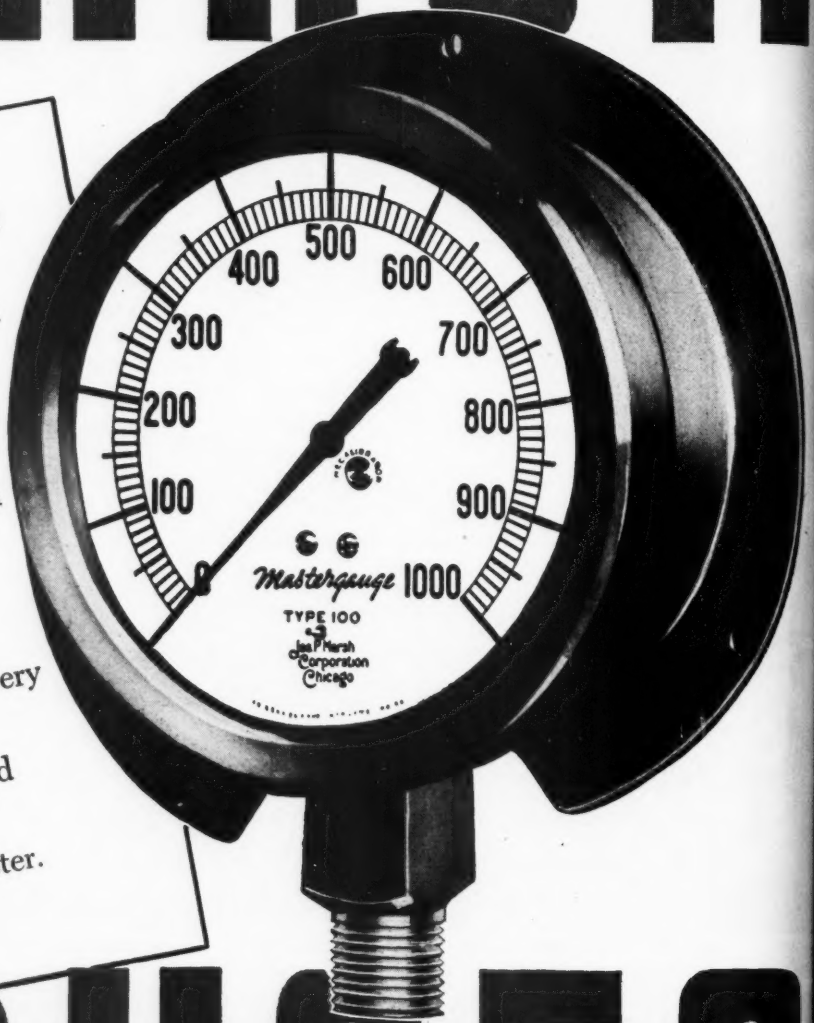

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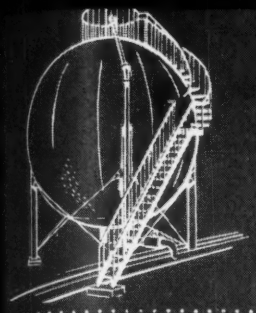
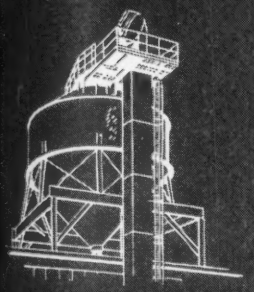
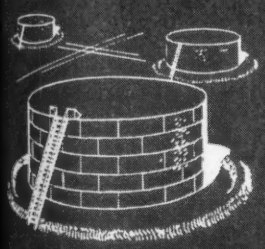
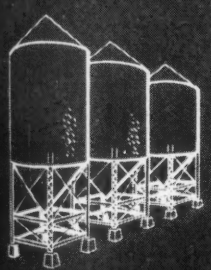
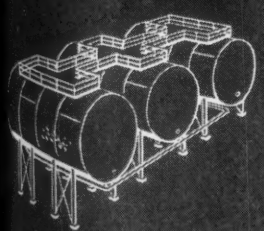
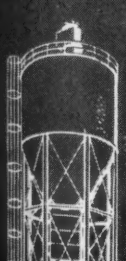












How to Solve

YOUR MATERIALS STORAGE PROBLEM!

PITTSBURGH · DES MOINES

Research

develop the answers for you

Finding the *right answers* to questions of efficient materials storage is a primary Pittsburgh-Des Moines activity.

Our research engineers, and our Chemical Storage Fellowship at Mellon Institute for Industrial Research, conduct a continuous program of study on storage problems from many fields, which is translated into better design, materials and methods by our fabricating divisions for the customer's benefit.

We will be glad to help with your own storage problem, if you will send us an outline of the factors involved.

PITTSBURGH · DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

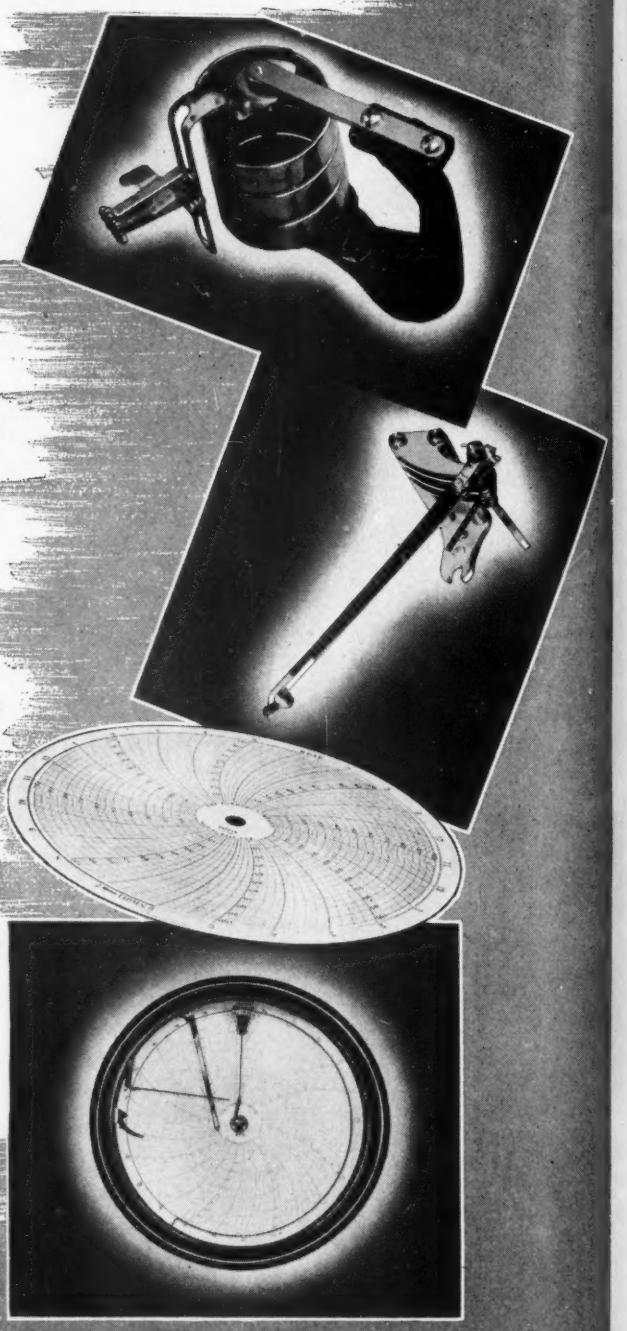
Sales Offices at:

PITTSBURGH . . . . . 3496 Neville Island
NEW YORK . . Room 980, 270 Broadway
CHICAGO, 1202 First National Bank Bldg.
SANTA CLARA, CAL . . 603 Alviso Road
DES MOINES . . . . . 997 Tuttle Street
DALLAS . . . . 1201 Praetorian Building
SEATTLE . . . . . 906 Lane Street

It all adds up to:

UNCHANGING CALIBRATION:

From pressure spring to precision-printed chart, Foxboro Pressure Recorder means uniform performance year-in, year-out.



PRESSURE SPRING

Helical, spiral or diaphragm type in special alloys . . . each one built and tested for a particular pressure service. Foxboro precision engineering makes them uniformly accurate, responsive, rugged, fatigue-free . . . withstand toughest service without change in characteristics.

PIVOTED MOVEMENT

Exclusive Foxboro Pivoted Movement and shorter pen arm give unequalled rigidity and precision. Shorter pen arm means greater angular pen-arm movement per unit of pressure change. All friction and lost motion is reduced to a practical minimum value, resulting in a *force-friction ratio* ample to insure a faithful record of pressure.

HUMITEX CHART

Literally precision-built. Made from paper specially produced to Foxboro specifications . . . printed in an air-conditioned press room from chromium-plated plates. Uniform beyond the possibilities of ordinary printing methods.

THE INSTRUMENT

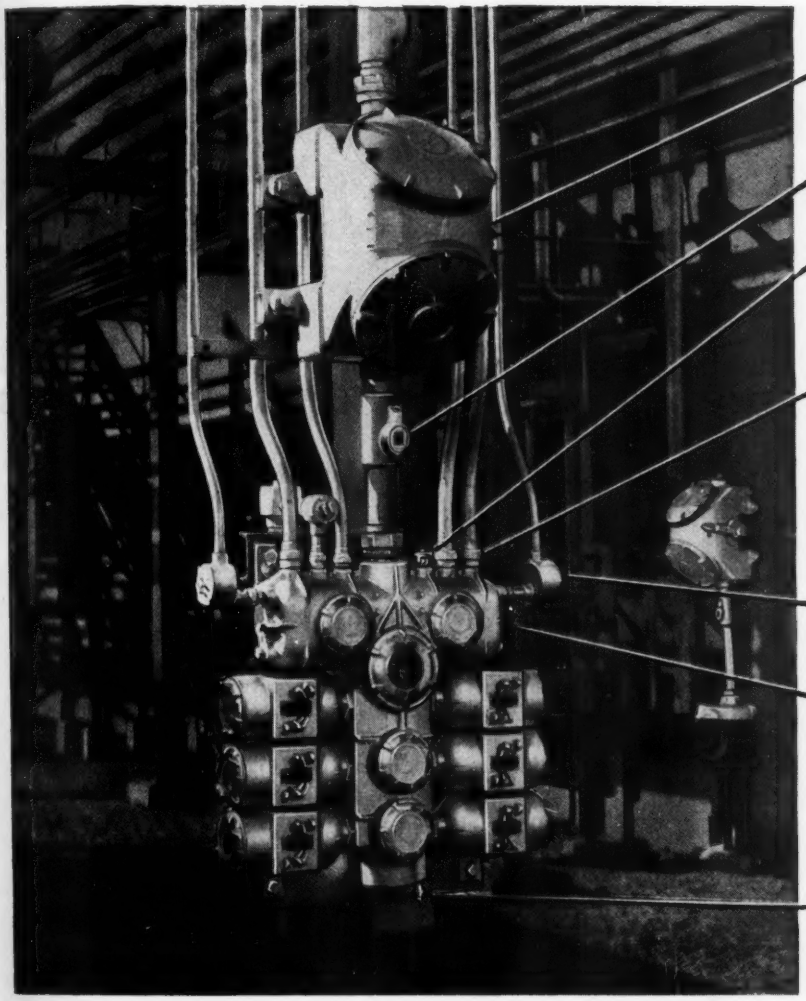
Rugged, simple, engineered from start to finish with the care that has made Foxboro Instruments famous for *sustained accuracy*. Standard models for ranges up to 10,000 psi; higher ranges special. Multiple-pen models record up to 4 pressures on single chart. Write for Bulletin 22-2A containing full details. **The Foxboro Company, 60 Neponset Avenue, Foxboro, Mass., U. S. A.** Also Montreal, Canada. Branches in principal cities.

FOXBORO REG. U. S. PAT. OFF. **PRESSURE RECORDERS**

Explosion-Proof
CONDULETS

afford **maximum safety** from explosion and fire

(CONDULETS are made only by CROUSE-HINDS)



Type FLB Explosion-Proof Circuit Breaker Condulet protecting the main lighting feeder

Type EYS Sealing Condulet

Type ECD Breather Valve and Type ECD Drain (shown at bottom of panelboard) ventilate and drain the main wiring compartment

Type UNY Explosion-Proof Union

Type GUAB Explosion-Proof Junction Condulet

Type EDP Explosion-Proof 12-Circuit Lighting Panelboard

Type ECD Drain

Locations where flammable atmospheres are likely to be present are designated as hazardous by the National Electrical Code. The Code requires explosion-proof electrical installations in such locations. Crouse-Hinds Company manufactures hundreds of explosion-proof CONDULETS, lighting fixtures, plug receptacles, and other equipment that affords maximum safety by preventing explosion and fire.

They are described in Crouse-Hinds Condulet Catalog 2509. Write for a copy.

A Nationwide Distribution Through Electrical Wholesalers

CROUSE-HINDS COMPANY
Syracuse 1, N. Y., U.S.A.

Offices: Birmingham – Boston – Buffalo – Chicago – Cincinnati – Cleveland – Dallas – Denver – Detroit – Houston – Indianapolis – Kansas City – Los Angeles – Milwaukee – Minneapolis New York – Philadelphia – Pittsburgh – Portland, Ore. – San Francisco – Seattle – St. Louis – Washington. *Resident Representatives:* Albany – Atlanta – Charlotte – New Orleans – Richmond, Va.
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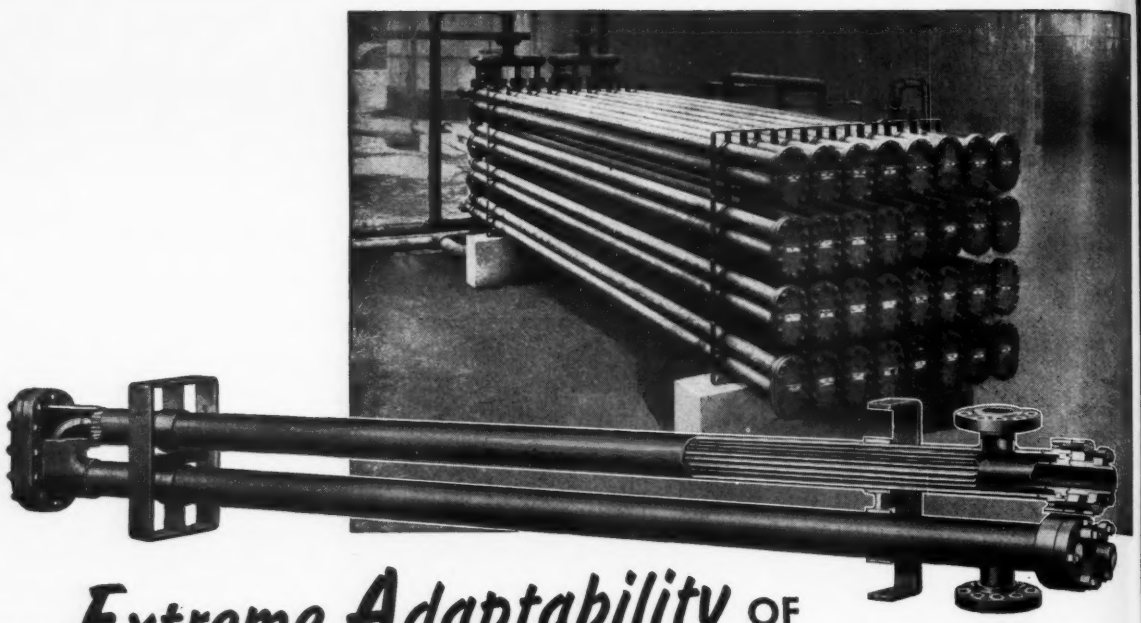
CONDULETS · TRAFFIC SIGNALS · AIRPORT LIGHTING · FLOODLIGHTS



THE *Extreme Adaptability* OF

BROWN FINTUBE SECTIONAL HAIRPIN HEAT EXCHANGERS

Enables users to keep production abreast of changing market and seasonal conditions

8 ADVANTAGES

BROWN FINTUBE
Sectional Hairpin
HEAT EXCHANGERS

1. Flanged Shell Seal and Flanged Union Head End Assembly.
2. Extreme Adaptability to Meet the Requirements of Changed Duties.
3. No Obsolescence.
4. Easy Inspection and Maintenance
5. Continuous Operation. No Shut Downs for Servicing.
6. Minimum Investment in Replacement Parts.
7. The Brown Resistance Welded Integrally Bonded Fintube.
8. Easily Removed Rear End Cover Plate.

Write today for Bulletin No. 481. It gives full details

● Unlike "bundle" type exchangers, which are custom built for a definite and fixed duty, Brown Fintube Sectional Hairpin Heat Exchangers give operating men almost unlimited flexibility to meet changing requirements. The capacity of the bank can be increased by adding additional sections to the original installation. Capacity can be decreased by valving off one or more of the parallel streams,—or reducing the number of sections in each stream. The entire bank can be changed from one duty, to another and totally different duty, by remanifolding the sections in different series-parallel arrangement. And the bank can even be disassembled, and the sections then reassembled as two or more smaller exchangers on different duties, in different plants.

Let us help you in adapting Brown Fintube Sectional Hairpin Heat Exchangers—with their many outstanding operating and maintenance advantages—to your next heat transfer requirement. The Brown Fintube Co., Elyria, Ohio. Sales engineers in the principal cities.

BROWN FINTUBE

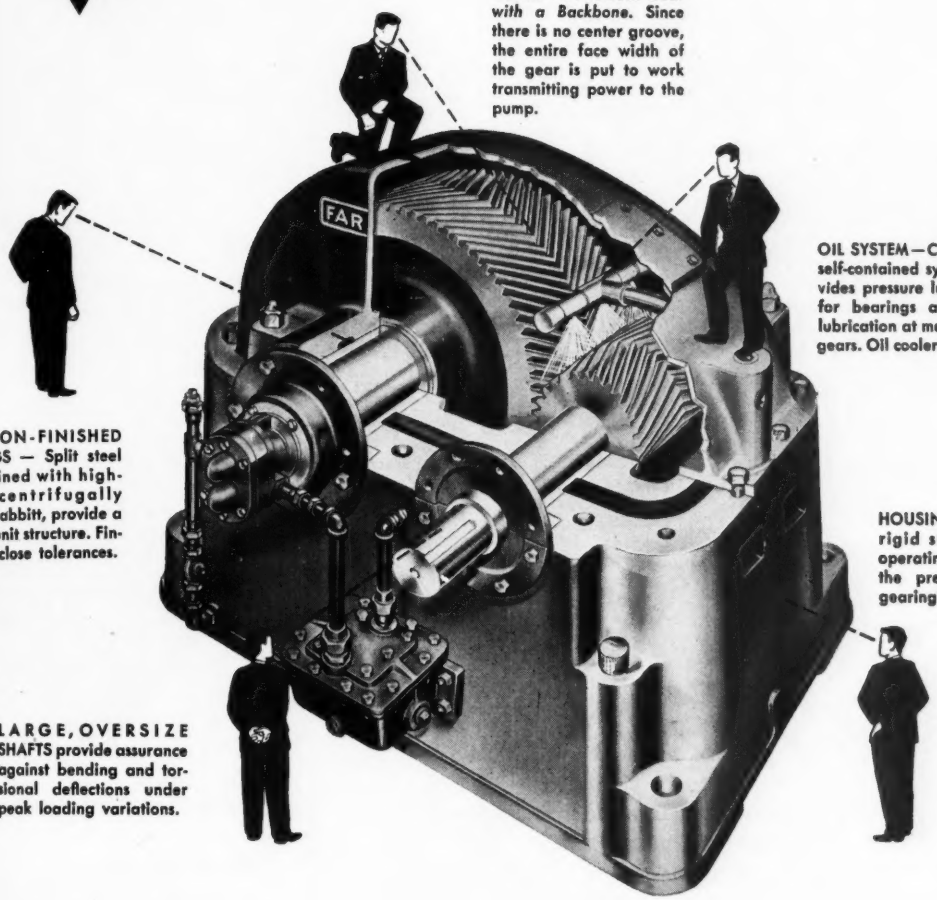
Sectional Hairpin

HEAT EXCHANGERS

RESISTANCE WELDED INTEGRALLY BONDED FINTUBES AND FINTUBE HEAT TRANSFER PRODUCTS

FROM ANY ANGLE

Farrel Speed Increasers Have Advantages



PRECISION - GENERATED GEARS—the famous *Gear with a Backbone*. Since there is no center groove, the entire face width of the gear is put to work transmitting power to the pump.

OIL SYSTEM—Completely self-contained system provides pressure lubrication for bearings and spray lubrication at mesh line of gears. Oil cooler included.

PRECISION-FINISHED BEARINGS — Split steel shells, lined with high-grade, centrifugally poured babbitt, provide a bonded unit structure. Finished to close tolerances.

HOUSING—Exceptionally rigid structure insures operating smoothness of the precision generated gearing.

LARGE, OVERSIZE SHAFTS provide assurance against bending and torsional deflections under peak loading variations.

When you are looking for speed increasers with a combination of features that assure many years of trouble-free operation, you will find that Farrel units fill the bill.

The first to be developed in a standard series, these units have been proved in pipe-line pumping service since 1932. All of the units installed then and since are still in operation, performing as well as on the day they were put into service.

Before you specify gear units, look into the many advantages of the Farrel design. For full information, send for Bulletin No. 448. No obligation.

FARREL-BIRMINGHAM COMPANY, INC., 344 Vulcan St., Buffalo 7, N.Y.

Plants: Ansonia and Derby, Conn., Buffalo, N. Y. *Sales Offices:* Ansonia, Buffalo, New York, Boston, Pittsburgh, Akron, Detroit, Chicago, Los Angeles.

OIL FIELD REPRESENTATIVES—Hercules-Lupfer Engine Sales Co., 124 N. Boston St., Tulsa 1, Okla. V. W. Osborne, 822-A M & M Building, Houston 2, Texas.

FB-495

Farrel-Birmingham

This Simple Compressor Meets the Complex Needs of a Changing Petroleum Industry

It's the Nash!

Here is a compressor presenting advantages found in no other device. Nash Compressors have only one moving part, rotating without metallic contact with the pump casing. No internal lubrication is required. Yet they produce 75 lbs. pressure in a single stage, with capacities to 6 million cu. ft. per day in a single structure.

There are no valves, gears, pistons, sliding vanes, or other complicated wearing parts in a Nash. Compression is secured by an entirely different principle of operation. Because of this, gas pumping problems difficult with ordinary pumps are often easily handled by the Nash. For example, Nash Pumps are standard equipment in the Synthetic Rubber Industry, where they have met the needs of new and difficult processes.

Nash Compressors are compact and save space. They run without vibration, and compression is without pulsation. They maintain original performance over long periods. Service is assured by a nationwide net-work of Engineering Service offices. Instructive bulletin shows how they operate. Write for it.

One moving part.

No internal wearing parts.

No valves, pistons, or sliding vanes.

No internal lubrication.

Low maintenance.

Slugs of liquid entering pump do no harm.

Non-pulsating pressure.

Saves floor space.

75 pounds in a single stage.

NASH ENGINEERING COMPANY

273 WILSON, SO. NORWALK, CONN.

1. Is this an au-to-mo-bile?
Yes, this is an au-to-mo-bile.
It is a fine au-to-mo-bile and

POWELL VALVES

helped to make every part of it.

American Industry has gone a long way since McGuffey compiled his First Reader in 1836. But Powell Valves have matched every step in its progress.

Literally, Powell Valves help to make everything that goes into the modern automobile. Because, whether it be motor, transmission, chassis, body, plastics, finishes, tires, anti-freeze, battery, gasoline or any other processed item, there are Powell Valves exactly suited to control the flow of all media used in their production.

This automobile merely illustrates the completeness of the Powell Line. The important point is that, no matter what *your* product may be, there are Powell Valves especially adapted for each and every one of your flow control services.

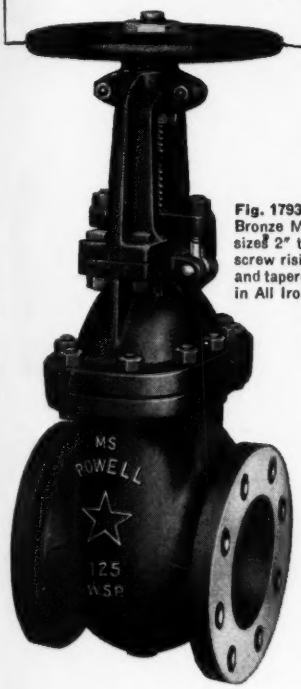


Fig. 1793—Large 125-pound Iron Body Bronze Mounted Gate Valve. Made in sizes 2" to 30", inclusive. Has outside screw rising stem, bolted flanged yoke and tapered solid wedge. Also available in All Iron for process lines.

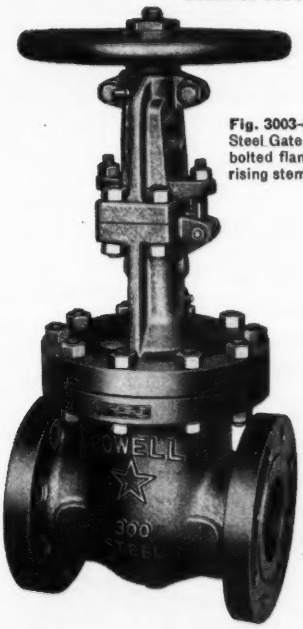


Fig. 3003—Class 300-pound Cast Steel Gate Valve with flanged ends, bolted flanged yoke, outside screw rising stem, tapered solid wedge.

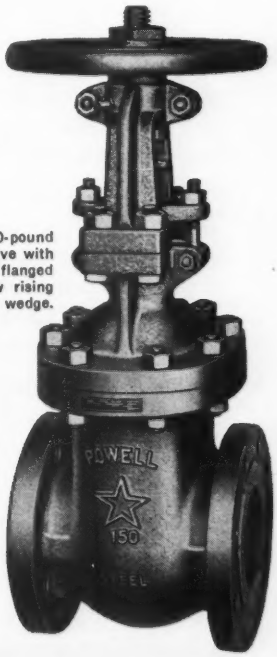


Fig. 1503—Class 150-pound Cast Steel Gate Valve with flanged ends, bolted flanged yoke, outside screw rising stem, tapered solid wedge.

Fig. 3061—Class 300-pound Cast Steel Swing Check Valve with bolted cap and flanged ends. Disc has ample lift to permit full, straightway, unobstructed flow through the valve body.

The Wm. Powell Co., Cincinnati 22, Ohio.

DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

POWELL VALVES

How you REDUCE DOWN TIME

by hauling with WALTER TRACTOR TRUCKS

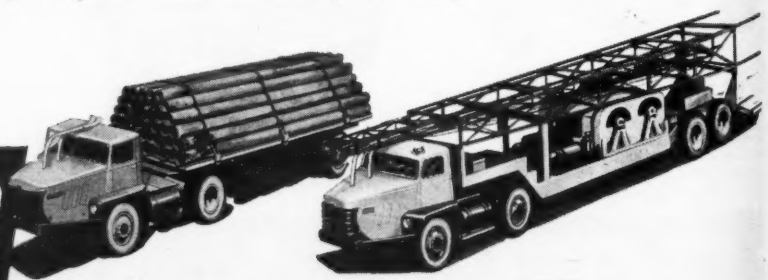
HOW much unproductive time do your rigs and equipment now waste through delays and difficulties in hauling? Every hour—every day you can save, is money earned.

Walter Tractor Trucks can save many days and service more jobs for you during the year. They are especially designed and engineered for off-the-road hauling of huge loads. They are far less affected by changing terrain, bad weather and grades that slow down or stop other trucks.

Walter Tractor Trucks move your loads fast and unfailingly under all conditions—adding working days to your calendar that are now lost because running conditions make hauling impossible.

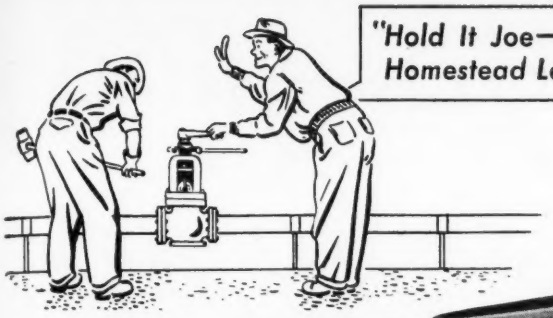
How can Walter Tractor Trucks do this? Briefly, because of their tremendous power and 100% traction in all four driving wheels—produced by the exclusive 4-Point Positive Drive. This great feature, plus many other engineering advances, has put Walter Tractor Trucks in a class by themselves in severe off-the-road hauling, for over 25 years.

Write for descriptive literature explaining the many advantages of Walter Tractor Trucks for your hauling.



WALTER
4-POINT POSITIVE DRIVE
TRACTOR TRUCKS

WALTER MOTOR TRUCK CO. 1001-19 Irving Ave. Ridgewood 27, Queens, L. I., N. Y.



Homestead

LEVER-SEALD Valves

ALWAYS WORK LAST LONGER COST LESS PER YEAR

STICKING valves are never a problem with Homestead Lever-Sealds on the job. Built into each valve is a powerful leverage, ready at all times to overcome the effects of corrosion, viscous fluids or temperature and pressure extremes which cause ordinary valves to stick or "freeze."

This powerful leverage not only relieves pressure between the seating surfaces to permit operation under all conditions; but it also is the means of providing the extra tight seal against leakage—the seal which keeps corrosive or erosive line fluids away from the seating surfaces; assures longer valve life and lowest cost per year.

Made in stainless steel, steel, semi-steel, bronze, monel or other alloys suitable for the working conditions under which they are to be used, Homestead Lever-Seald Valves may be had in sizes from 1" to 12"; and for working pressures from 150 pounds to 1500 pounds.

Choose the sizes and types for your services from Reference Book 39 Section 3. Write for your free copy today.

Check these Outstanding Features:

A QUARTER-TURN fully opens or closes valve.

INSTANT STICK-PROOF OPERATION. Plug turns freely after seating pressure is relieved by screw lever.

POSITIVE LEAKLESS SEAL is obtained by applying full seating pressure with screw lever after opening or closing.

LEAK PROOF. Deep stuffing box, gland and sealed bottom prevent fluid loss, and reduce hazards.

STRAIGHT-LINE FLUID FLOW. Little or no pressure drop.

SEATING SURFACES ALWAYS PROTECTED in both open and closed positions. Fluid or grit cannot damage valve seat.

HOMESTEAD VALVE MANUFACTURING CO.

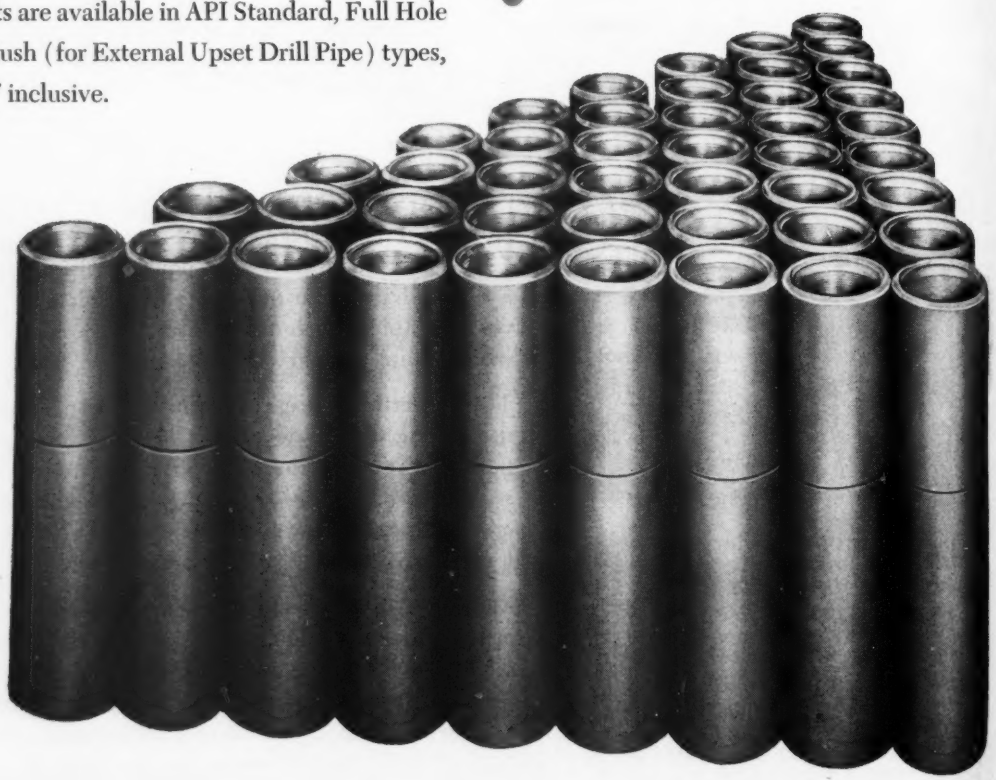
P. O. BOX 403 CORAOPOLIS, PENNA.

you can always depend on their *Uniformity*

Made from the finest chrome-nickel steel under exacting controls for hardness, CP Tool Joints meet highest standards of precision manufacture.

Rigid inspections and alignment tests assure invariable uniformity of every joint. Each joint has to pass a final water pressure test of one ton per square inch to make certain that threading is absolutely accurate and watertight.

CP Tool Joints are available in API Standard, Full Hole and Internal Flush (for External Upset Drill Pipe) types, sizes 2⅜" to 6⅝" inclusive.



CHICAGO PNEUMATIC TOOL COMPANY

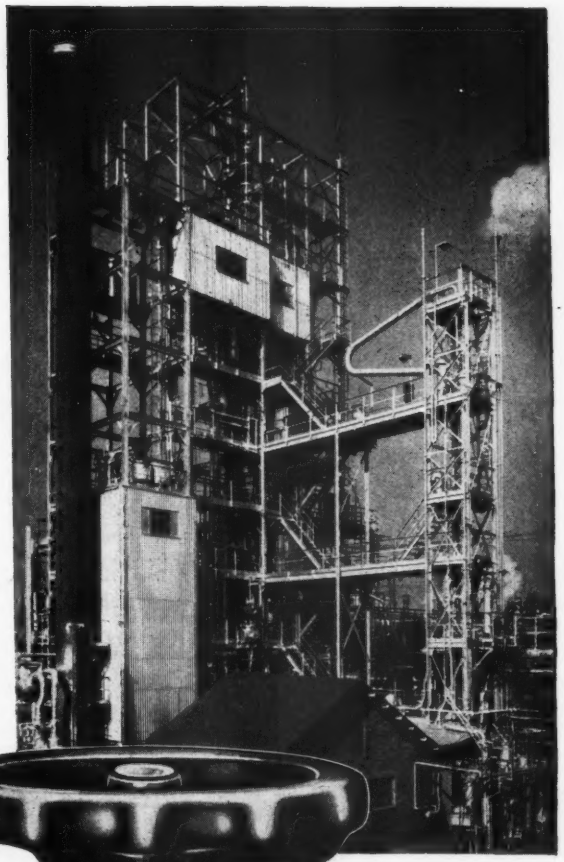
MANUFACTURED AT FRANKLIN, PA.

GENERAL & EXPORT OFFICES: 6 EAST 44th STREET, NEW YORK 17, N. Y.

Oil Tool Sales Office: One N. W. 16th Street, Oklahoma City, Oklahoma

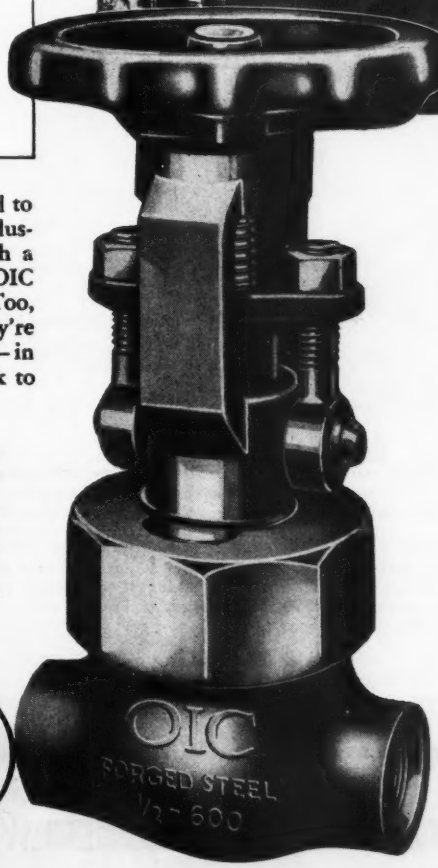
In Laboratories and in Gas Synthesis Plants

EACH day more of the major projects in the petroleum industry prove that OIC *sets the pace in valves!* Included in recent large-scale installations is one of the industry's leading research laboratories that deserves the highest commendation for its contributions to synthetic rubber and other developments. Part of this operation is this twelve-story Gas Synthesis pilot plant, designed to play a vital part in the research and development of synthetic gasoline.



OIC

SETS THE PACE IN VALVES



Yes, OIC Valves are *precision* valves, designed to meet every requirement of the petroleum industry. Streamlined for free and easy flow with a minimum of pressure-cutting turbulence, OIC Valves keep pressures *up* and costs *down.* Too, there's an extra margin of safety, for they're built to provide maintenance-free service — in heaviest use. And for leakproof closures, look to OIC . . . Pace-Setter in Valves!

NEW OIC FORGED STEEL VALVE CATALOG NO. 48FS NOW READY

It's made to fit inside your big 235-page OIC Catalog. You'll have *all* the valve information you need right at your fingertips. For your free copy, just write, giving your name, firm and address to The Ohio Injector Company, Wadsworth, Ohio.

OIC

VALVES

IRON • STEEL • BRONZE

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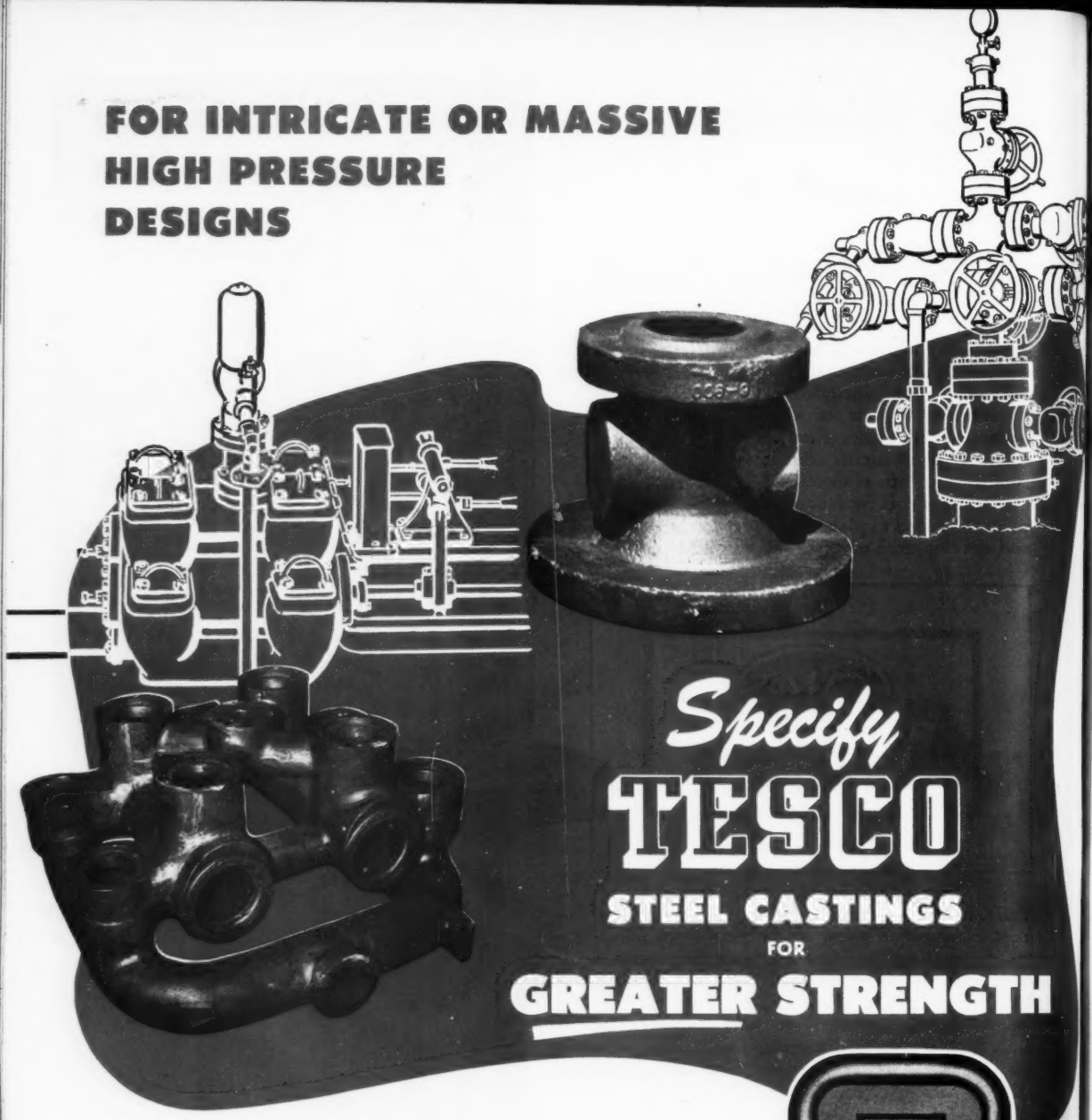
FOR INTRICATE OR MASSIVE HIGH PRESSURE DESIGNS



Specify TESCO STEEL CASTINGS FOR GREATER STRENGTH

Withstanding high pressures is all in the day's work for this intricate mud pump fluid end casting and this massive well head casting *because the uniform structure throughout gives these products greater strength.*

Pouring sound steel castings like these . . . for intricate or massive high pressure designs, from alloy or stainless steel . . . is all in the day's work for TESCO *because TESCO'S modern foundry equipment, experience and extensive testing and control procedures assure uniformly high quality steel castings for your products.*

Greater strength is only one of seven important advantages steel castings give you. Ask your TESCO Representative how TESCO steel castings can make your product stronger, more economical to manufacture or fabricate.

TESCO IS THE MOST EXPERIENCED FOUNDRY ON THE GULF COAST

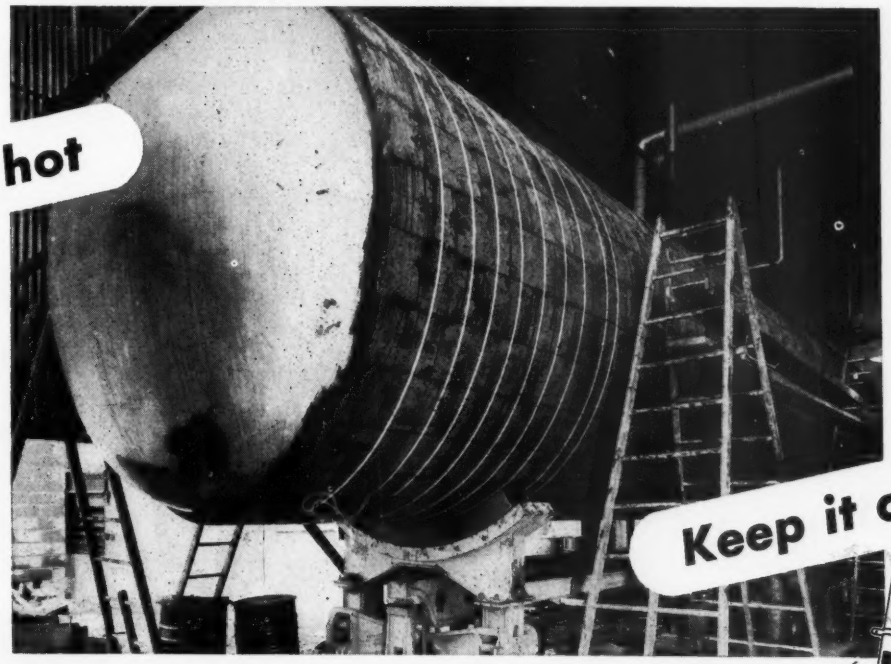
TEXAS ELECTRIC STEEL CASTING CO.

GOOD CASTINGS — CARBON AND ALLOY STEEL — HOUSTON, TEXAS

THESE SEVEN IMPORTANT FEATURES ARE YOURS ONLY IN STEEL CASTINGS

1. **UNIFORM STRUCTURE THROUGHOUT**—for greater strength.
2. **DISTRIBUTION OF METAL**—for better weight-strength ratio.
3. **CHOICE OF MECHANICAL PROPERTIES**—to fit your specific need.
4. **GOOD MACHINABILITY**—for better designs at lower cost.
5. **DIMENSIONAL STABILITY**—for better fit, better performance.
6. **EASE OF WELDING**—for fast assembly with other parts.
7. **FATIGUE RESISTANCE**—for longer life, less replacement.

PC Foamglas insulation is being installed on this storage tank to help maintain a required temperature of minus 30°F.



. . . with this permanent insulation

● Whether your processing equipment operates at high or low temperatures, PC Foamglas will help maintain required levels. On tanks, towers, retorts, and other large vessels, on piping, heat exchangers and processing equipment of many kinds, PC Foamglas gives long trouble-free service.

Made of millions of sealed glass cells, PC Foamglas provides highly efficient insulation. And since, being true glass, it is impervious to elements that destroy other materials, PC Foamglas retains its original insulating value *permanently*.

Freedom from repairs, maintenance and replacement makes Foamglas a truly economical insulating material.

When you are faced with unusual insulating problems our insulation specialists will be glad to consult with you. They can tell you where and how you can use PC Foamglas to the best advantage. Meanwhile, why not send for our new booklet on PC Foamglas for industrial insulation? It is free, just mail the convenient coupon.

This is FOAMGLAS

The entire strong, rigid block is composed of millions of sealed glass bubbles. They form a continuous structure, so no air, water, vapor or fumes can get into or through the Foamglas block. In those closed glass cells, which contain inert air, lies the secret of the material's permanent insulating efficiency.

FOR ADDITIONAL INFORMATION SEE OUR INSERTS IN SWEET'S CATALOGS

Pittsburgh Corning Corporation
Dept. S-19, 307 Fourth Ave.
Pittsburgh 22, Pa.
Please send me without obligation, your FREE booklet on the use of PC Foamglas.

Name_____

Address_____

City_____ State_____

PITTSBURGH PC CORNING

FOAMGLAS INSULATION

. . . when you insulate with FOAMGLAS . . . you insulate for good!

You may have *plenty* of extinguishers... BUT are you *sure* they're ready for action?

Periodic inspection and maintenance, recharging when necessary... these steps are essential to keep your fire extinguishers ready for *immediate* action.

Perhaps this involves a serious drain on the time of your personnel—who may be urgently needed for productive tasks. If so, here's a suggestion.

Why not let your Kidde representative take on the job?

He is prepared to offer you, on an annual contract basis, a comprehensive service covering all phases of fire-extinguisher service. He will call at regular intervals, to check the condition of your equipment, and will let you know immediately when recharging and repairs are needed. He has full facilities for the actual handling of the recharging or repairs.

Such an arrangement can help you, in other ways, to make most effective use of your fire extinguishers. As a specialist in fire-fighting, your Kidde representative may be able to *locate* your extinguishers to better advantage. Perhaps one extinguisher is hard to reach. Perhaps two types of extinguishers would give better protection if their positions were interchanged. You'll find such a service well worthwhile—why not look into it?

The words "Kidde" and "Lux" and the Kidde seal are trade-marks of Walter Kidde & Company, Inc.

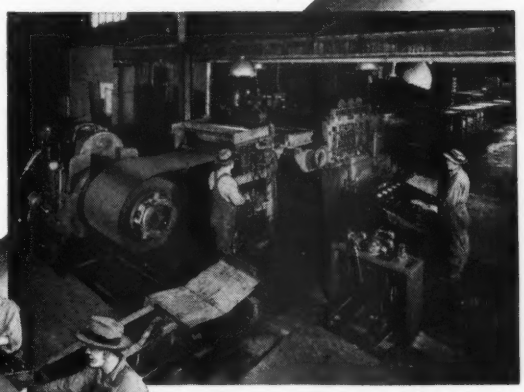
Kidde

Walter Kidde & Company, Inc. • **154 Main St., Belleville 9, N. J.**

If You Use
SHEET STEEL...

Let International quote on decoiling, flattening, cutting, and pickling. Also on coil-slitting. International's mill-type equipment handles these services at low cost, and assures dependable supplies even though mill facilities are crowded.

Hundreds of manufacturers look to International for steel service to assure a steady flow of incoming materials. Perhaps similar service can be arranged for you . . . it will pay to inquire.



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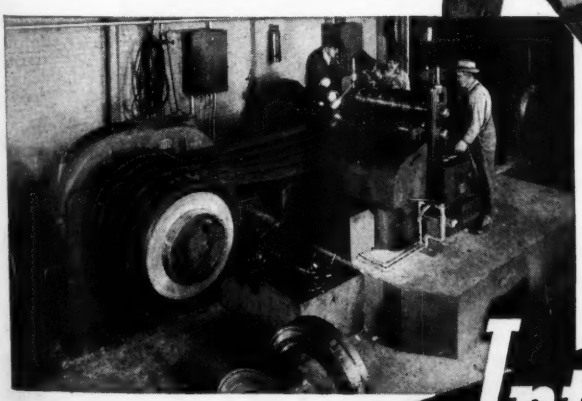

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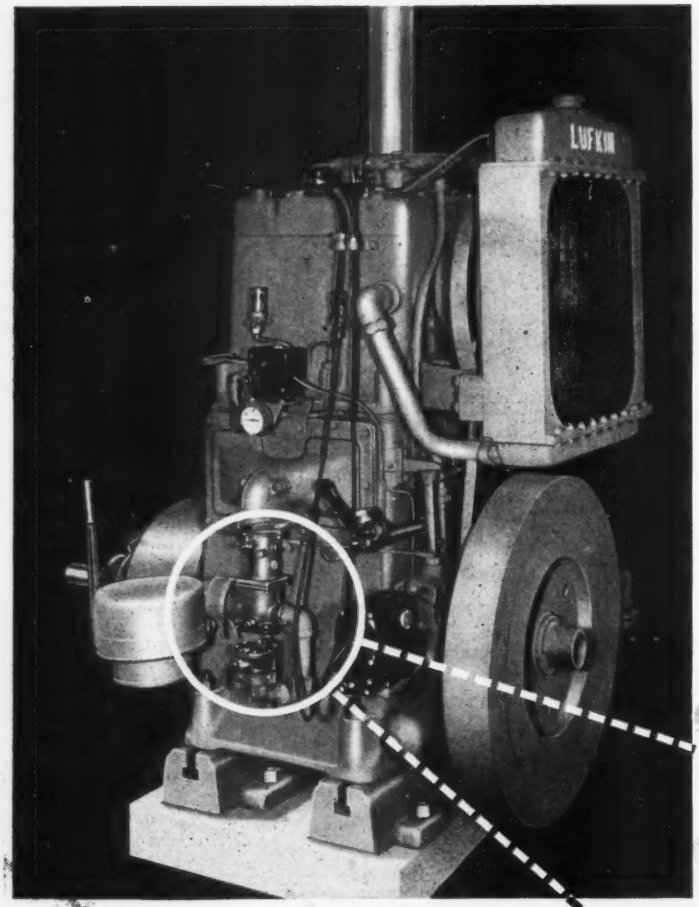

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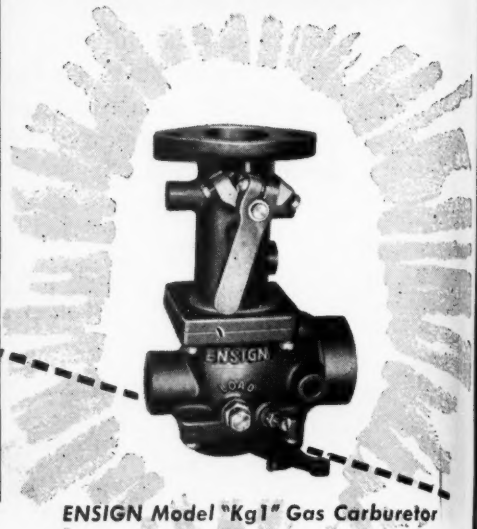

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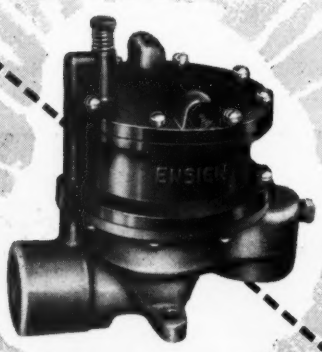

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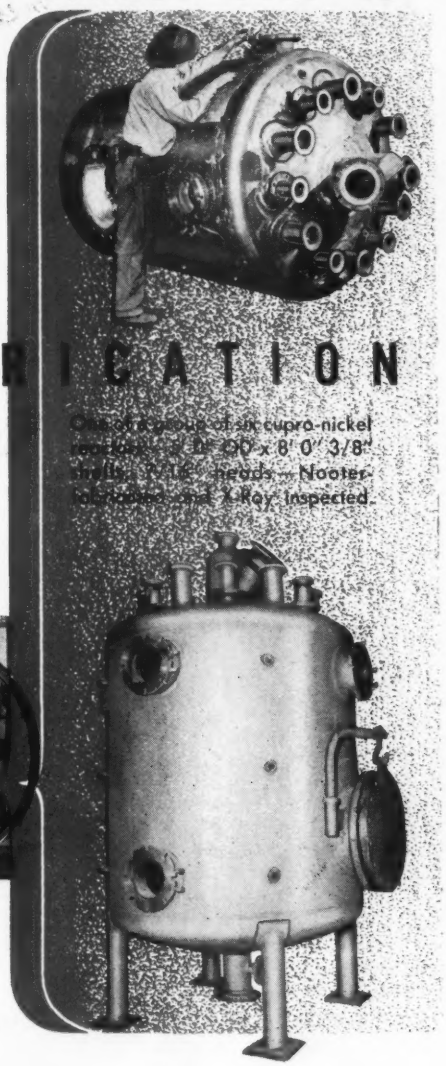

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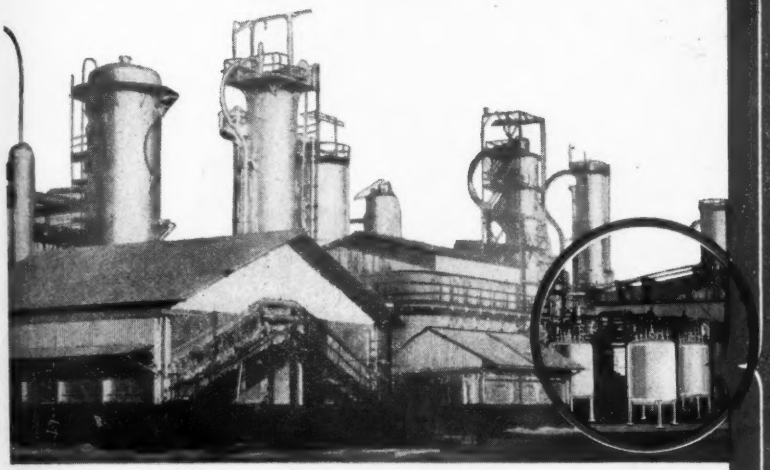

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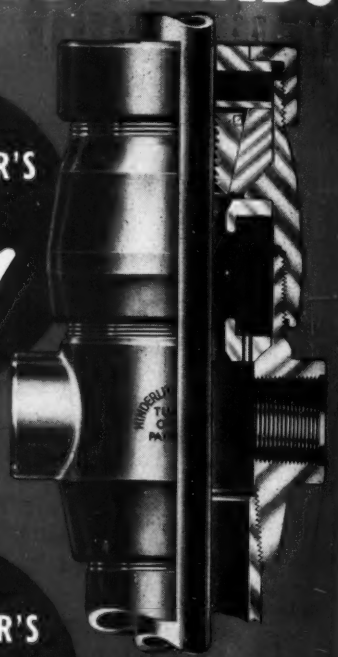

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JOURNALLY Speaking

It's Done With Figures

THIS is the Journal's annual review and forecast issue. We're all pretty proud of it, and we're confident you will find much information in it which will help in your business, no matter what branch of the oil industry you are in.

There are 90 pages—count 'em—of statistics, tables, charts, graphs, and explanatory text telling everything we could find out about what the oil industry in the United States did last year and what it is going to do in 1949.

This is an issue to latch on to, above all others of the year—though we find most of our subscribers maintain pretty complete files of all our issues. But this issue is designed and arranged for permanent reference, and many readers tell us they keep the annual issue handy to check on figures throughout the year.

"What is past is prologue" says an inscription on the front of the Federal Archives Building in Washington. Roughly translated, this oracular double-talk means approximately "Well, that's that; now where do we go from here?"

That's what the oil industry is wondering today, and the purpose of this annual issue is to help answer the question.

Not only do these 90 pages of figures tell what happened last year and before; they also give some illuminating forecasts of what will happen this year. We don't tell you how to run your own business but we do give you some important facts on trends in the industry as a whole. Our idea is that this information should be a big help in doping out just where your operations will dovetail into this trend. That's why we publish it.

The big companies already have much of this information and are using it to map their activities for 1949 and beyond. That's one of the reasons they got big and stay that way.

Those who sell equipment and services to the oil industry also, we find, make much use of our annual issue in devising their potential sales demands, both over all and by areas, and thus get prepared to have the stuff where it's wanted and when.

How do we know what's going to happen many months from now? Well, it's our job to know—part of our job, at least. And we don't do it with mirrors or by rubbing a goose bone. Some of the top-drawer economists and executives of the industry help us.

We tell you, for example, how many wells are going to be drilled in each state, and how much footage. How do we know? We asked. The operators who are going to do the drilling have their programs pretty well planned out, and they told us, in confidence, knowing that they would benefit from our published totals.

Why pick the end of January for a review and forecast issue, when New Year's Day is the traditional time for such? The answer is that this is about the earliest date anyone can assemble and correlate all the data on the preceding year. Even then, some of the figures are preliminary and subject to minor revision when final official statistics are issued months hence. By that time they are too late to do you any good in planning for 1949. We are confident that the figures in this issue are sufficiently accurate for working purposes by the industry. We have been at this business for a long time and have a pretty good check on our sources.

Getting out this issue was no week-end job. Collection of the figures went on all during last year. For the past couple of months our economists and statisticians have been burning plenty of midnight oil. They have been trying to do two jobs. First, assembling, checking, and totaling a "jillion" figures for you. Second, analyzing and interpreting as they went along so they could present the information in the kind of summaries and charts they thought would be most helpful to you.

Right now the boys are so worn out they want to forget the whole thing. But in a week or so their interest in life will be revived again, particularly if one or two of you write in that their efforts were not in vain.

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FOUNDED IN 1910 BY PATRICK C. BOYLE

VOL. 47, NO. 39 JANUARY 27, 1949

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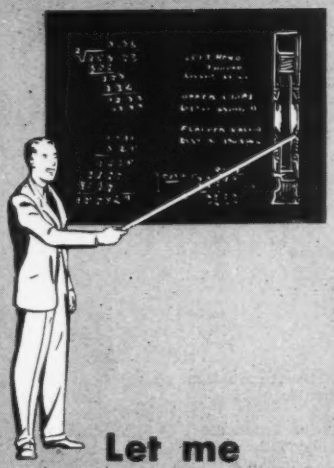

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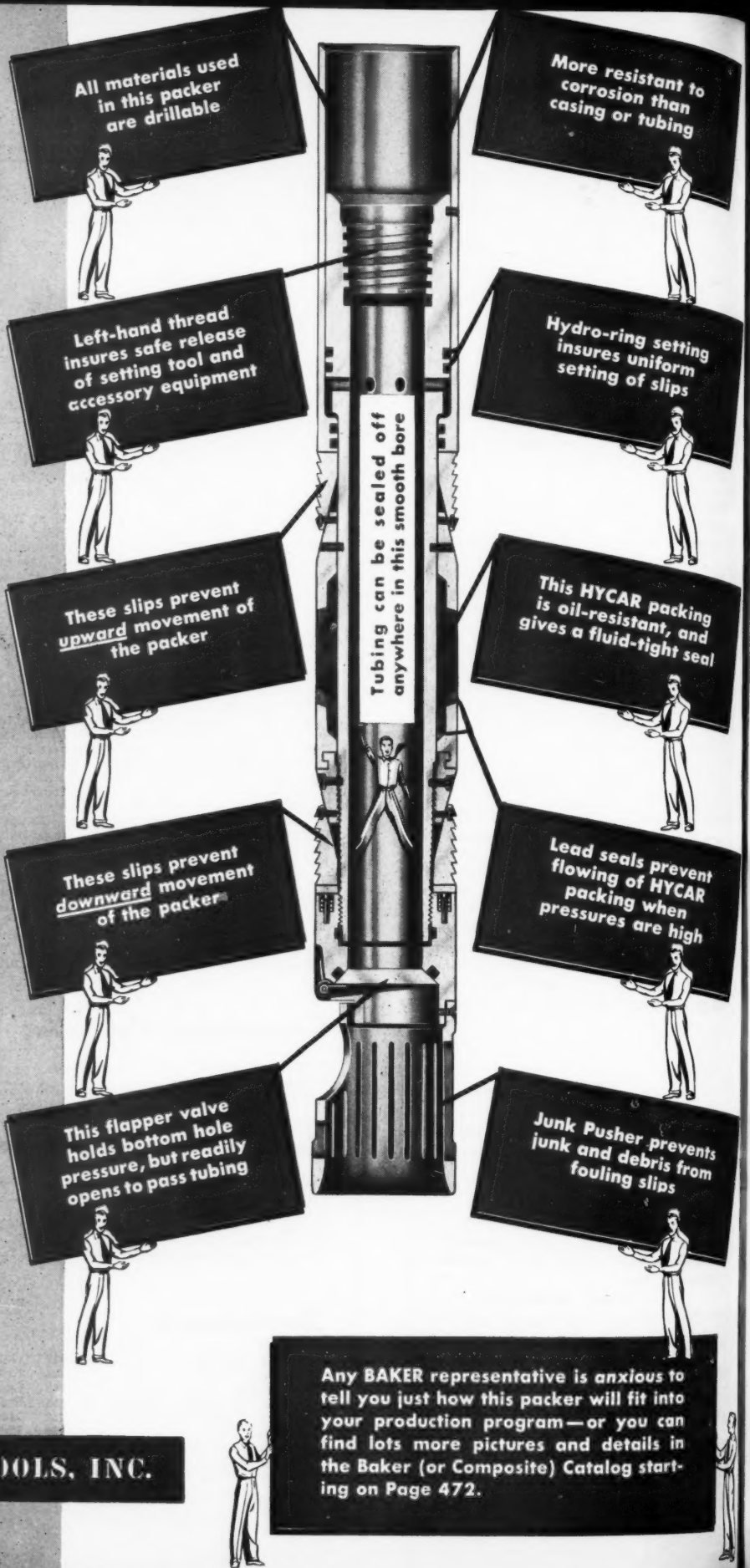
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THE OIL AND GAS JOURNAL

A Promise Kept

ONE year ago the petroleum industry was on trial in the court of public opinion. There were a few spot shortages of petroleum products, and there was serious public concern about the remainder of 1948. All sorts of charges were hurled at the industry; a few from panic-striken and excitable people; some from people with ulterior motives; but mostly from alarmed and uninformed pessimists.

Patiently and courteously the industry answered the charges and saw to it that its answers reached the jury, the American people, through every possible channel of publicity and information. It explained the postwar problems and told what it was doing to solve them. All of these explanations ended with a promise.

That promise was: given materials, especially steel, and freedom from arbitrary restrictions by Government, the American petroleum industry would end the oil shortage and provide the people with an ample supply of petroleum products as rapidly as humanly possible.

The promise has been kept. Most people would have accepted the promise as fulfilled if supplies of petroleum products were ample by January 1, 1949, even if there had been some mild gasoline shortages in the summer of 1948. But the American petroleum industry has a habit of promising big things, and then delivering even bigger things. On August 19, 1948, in mid-summer, The Oil and Gas Journal proudly announced that the oil shortage was over.

Keeping that promise was not an easy, routine effort. The achievement can be seen by the consumer in ample supplies, with dealers competing for his purchases. What he cannot see is the Herculean labor that brought about that happy situation. No man can ever see the whole picture.

But in this issue there are nearly 90 pages of facts, figures, and charts that supply a historical record of that mighty effort. The phrases "new record established," and "a new all-time high" occur with almost monotonous regularity, as different parts of the industry are described.

This, however, is only the beginning. There are forecasts for 1949, as well as reviews of 1948. These forecasts show that ours is no laggard industry, needing to be prodded. On a broad front, facilities to serve the American people still better are to be expanded at a cost of billions of dollars in added capital investment.

Refining facilities are to be expanded and modernized to give the consumer still better familiar products, and some new ones. Last year's progress in transportation made only a good dent in the ambitious projects definitely scheduled for modernization and expansion; particularly those to bring natural gas to more consumers. Consumers are to be assured of still greater future oil supplies by an expanded exploration-well drilling program that will even exceed last year's record.

Texas February Allowables Cut; Operators Cite Overproduction

by Leigh S. McCaslin, Jr.

HOUSTON.—For the second consecutive month the Texas Railroad Commission has reduced the state's allowable crude production by a sizable amount.

A reduction of 66,188 bbl. daily from the January allowable has been ordered for Texas' February allowable making it 2,442,044 bbl. daily. The January allowable had been cut 250,985 bbl. by the regulatory group at the December proration hearing.

The latest cut will be accomplished by putting all prorated fields, except East Texas, on a 23-day producing month. East Texas will continue on a 20-day basis. The February producing period compares with 27 days in January.

The commission's action came after a number of companies had testified that production is too high, particularly in West Texas. With regard to the West Texas area, Humble Oil & Refining Co. advised that its production is currently running 6,650 bbl. daily above the company's pipe-line capacity. Magnolia Petroleum Co. and The Texas Co. reported they were running 5,000 bbl. ahead of desired purchases.

Greater Reductions Asked

Neil Prichard, Col Tex Refining Co., Colorado Springs, recommended allowable reductions as high as 56 per cent in the West Texas fields where his company buys oil. Col Tex's needs are 4,465 bbl. less than its supplies at present, he added. Prichard attributed this condition to the decline in the demand for fuel.

Hiram Brown of Talco Pipe Line Co. asked for reductions of 50 per cent in Como, Mitchell Creek, and Manziel-Sub Clarkson fields where Talco makes purchases.

Even before the hearing was held, commission members Ernest O. Thompson and Olin Culberson had indicated that a cut would be ordered. Culberson stated that storage has been increasing 75,000 to 100,000 bbl. daily.

Thompson noted: "It looks like the 250,000-bbl. cut we were shooting for this month was not completely accomplished. There is a considerable overage going to storage, perhaps 65,000 to 85,000 bbl. a day. We've gone from scarcity to overproduction in the United States, and stocks are overhanging to a critical extent. Within 12 months, 82,000,000 bbl. has been added to storage. Some are having trouble moving their oil by pipe line because line capacity contracts in cold weather."

The new allowable is 22,044 bbl. above the February estimate for Texas of the Bureau of Mines. It is 302,128 bbl. below nominations by crude purchasers. Purchases nominated 2,744,172 bbl. which is 144,062 below their total for the month of January

Changes Are Compared

February allowables and changes by districts as compared with January allowables are:

1. Southwest Texas—30,028, down 729.

2. Southwest Texas—158,581, down 9,284.

3. Gulf Coast—455,853, down 22,523.

4. Southwest Texas—227,934, down 12,029.

5. East Central Texas—47,243, down 23,061.

6. East Texas field — 322,348, up 30,051.

6. East Texas (other) — 115,706, down 4,402.

7-B. West Central Texas — 72,361, down 1,803.

7-C. West Central Texas — 50,900, down 2,299.

8. West Texas—679,713, down 35,909.

9. North Texas — 167,795, down 4,885.

10. Panhandle — 113,302, down 16 bbl.

Although the January allowable was cut 250,000 bbl. daily, actual production dropped somewhat less than this figure. The Oil and Gas Journal figures show that average daily production for the week ended January 15 was only 182,185 bbl. less than for a similar period in December. The latest slash will probably bring the state's production down only 50,000 or 60,000 bbl. daily. This would give Texas an actual daily average production of around 2,275,000 bbl. for February.

An estimated production of 253,331 bbl. daily of distillate and natural gasoline during February will raise the state's total permissive output of all liquid hydrocarbons to 2,695,375 bbl.

Several requests were made to the commission for special reductions, but action on these was postponed by the commission. It was announced that the next state-wide hearing will be held in Houston on February 15. Austin is overcrowded at the present time due to the fact that the legislature is in session.

In commenting on softening market conditions, commission chairman William J. Murray, Jr., stated that the situation offered an opportunity for conservation rather than a cause for alarm. Murray also stated his views on unitization at the hearing. His statement was believed to be a reply to newspaper comments to the effect that he is supporting a bill introduced in the Texas Legislature by Sen. George Moffett.

Murray said that although he favors the principle of unitization, he has endorsed no particular bill. "We are losing billions of barrels of oil which we cannot afford to waste through failure to practice pressure-maintenance operations," he said. "I earnestly hope that conflicting legal views will be reconciled and the way made clear to put in conservation measures as fast as the engineers can prove them practical."

Mississippi is also having overproduction trouble. Two major purchasers in the state have reduced their purchases in four fields by about 20,000 bbl. daily in the past 2 months.

Interstate Oil Pipe Line Co. announced that effective January 15 it would reduce its purchase to 50 bbl. daily per well in three Mississippi fields—Heidelberg in Jasper County, and Yellow Creek and Eucutta fields in Wayne County. Eucutta was cut 1,450 bbl. daily to 5,750 bbl.; Heidelberg was cut 5,100 bbl. to 4,700 bbl., and Yellow Creek was reduced 2,700 bbl. to 1,900 bbl.

Gulf Refining Co. has reduced its buying in Baxterville field 6,000 bbl. daily to 11,600. The company reduced its purchases in the same field only 2 months ago by a daily total of 5,400 bbl.

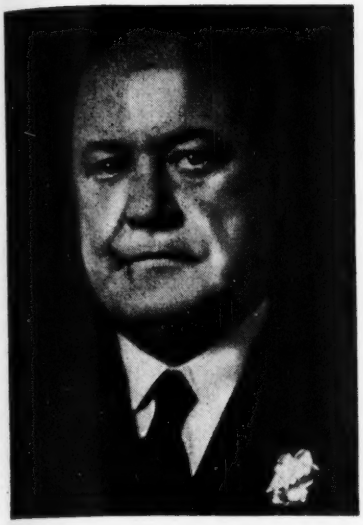
Field allowables in Mississippi are not set by a state regulatory body. Production is governed by the demand of the crude purchasers.

32,350-Bbl. Reduction Sought for Oklahoma

A reduction of 32,350 bbl. daily in the February crude-oil production allowable for Oklahoma was recommended early this week by Walker T. Pound, state conservation director. January allowable for the state was 433,500 bbl. daily.

The reductions ranged from 25 to 150 bbl. per day per well and would affect virtually every allocated field in the state. The largest reduction was in the Velma field of Stephens County, cut from 36,000 bbl. to 22,000 bbl. daily.

The Southwest Antioch Gibson Unit field was cut from 10,000 to 8,000 bbl. daily at the request of the unit operators.



HARRY F. SINCLAIR

P. C. SPENCER

H. F. Sinclair Retires as Active Head of Companies He Founded

HARRY F. SINCLAIR, founder and chief executive of the oil companies bearing his name, has announced that he has resigned as president of the parent company, Sinclair Oil Corp., and has been elected chairman of the board of directors.

Sinclair will be succeeded as president of Sinclair Oil Corp. by P. C. Spencer, now president of the principal operating subsidiary, Sinclair Refining Co., and executive vice president of Sinclair Oil Corp.

Sinclair informed the directors that with the completion of the modernization and expansion program initiated in 1945 and involving expenditures of more than $150,000,000, he desired to be relieved of the active direction of operations. In connection with the condition of the company, Sinclair said: "The past year was the most prosperous in our history. Our production has substantially increased, our products pipe-line system is in almost full operation, our refineries are at peak of efficiency, and our marketing expansion, both as terminals and outlets, is well under way. Our problem now is the most efficient and economical use of these facilities. This job I am turning over to Mr. Spencer and the younger men in the company. Mr. Spencer has the confidence and support of the organization and no changes in major policies are to be anticipated."

Prior to founding the present Sinclair companies, Sinclair operated oil properties in Oklahoma and Kansas as senior partner in the firm of Sinclair & White. Sinclair Oil & Refining Co., the original from which all present Sinclair companies are an outgrowth, was founded in May 1916 and Sinclair has been the active director of the widespread organization for 33 years.

Spencer become president of Sinclair Refining Co. in September 1947, succeeding Sinclair. He became affiliated with the oil industry in 1922 when he joined Producers & Refiners Corp. When Prairie companies, of which Producers & Refiners was a subsidiary, were acquired by Sinclair, Spencer moved to New York and became active in the Sinclair organization. He was elected general counsel of the company in 1946. In addition to his activities in the oil business he has held executive positions in several natural-gas companies, including presidency of Southwestern Development Co. and Canadian River Gas Co., and vice presidencies and directorships of Colorado Interstate Gas Co.

Muskat to Lecture on Reservoir Engineering

A series of lectures on petroleum reservoir engineering will be given at the University of Texas, Austin, February 8, 9, and 10, by Dr. Morris Muskat, head of the physics division of Gulf Research & Development Co., Pittsburgh, and a recognized authority in this field.

Attendance at these lectures will be open to all interested parties. The series is being given under the auspices of the department of petroleum engineering, of which Dr. H. H. Power is chairman.

Trial of Texas Flare-Gas Suits Is Delayed

HOUSTON.—Trial of the Fullerton field gas-flaring case was postponed until February 21 this week, and the Flour Bluff field case was put on the docket of the Austin Court of Civil Appeals for May 4.

Final outcome of these two suits and 12 similar ones will no doubt be greatly affected by the Heyser field case which is now being considered by the state Supreme Court. Arguments in the Heyser case were heard by the court on January 12. Following the hearing the state filed a supplemental brief contending that the court should take jurisdiction of the suit. Attorneys for the oil companies concerned had argued that the court did not have jurisdiction to take the suit.

The Fullerton field case was postponed after Elton Hyder, assistant attorney general, notified District Judge Charles O. Betts that operators in the field advised the Railroad Commission that they will be in "almost complete compliance with the flare-gas order by the latter part of next week."

After the court granted a postponement for the Fullerton case, the Railroad Commission ordered two additional January shutdown days for seven producing horizons of Fullerton field. Reason given by the commission was "to prevent the flaring of residue gas from the Fullerton gas-processing plant pending the completion of additional facilities for disposing of this residue gas." The two added days bring the total shut-in days for January to six.

It is expected that all gas waste in the field will be stopped by May 4 when the Flour Bluff case is scheduled to come before the Austin Court of Civil Appeals. Houston Natural Gas Co. is scheduled to begin taking all residue gas from the Flour Bluff gasoline plant by May 1. Compressors were ordered last April and delivery is expected this month with installation completed by May.

On another front of the commission's fight against gas flaring, it was stated by commission members that there has been no change in the scheduled show-cause hearings. Operators in 26 fields have been ordered to show cause January 25 why alleged flaring of 177,000 M.c.f. of gas should not be stopped. These 26 fields are in addition to the 15 now affected.

Constitutional Amendment Asked By Texas to Recover Tidelands

HOUSTON.—A resolution condemning the tidelands decision of the U. S. Supreme Court and calling for a constitutional amendment to "repudiate" this decision was passed unanimously last week by both houses of the Texas Legislature.

The resolution is being sent to the presiding officer of each branch of the legislature in the other 47 states. With it goes the recommendation of the Texas lawmakers that the other states also petition Congress to call a convention for proposing a constitutional amendment. This procedure is outlined in Article V of the U. S. Constitution which provides that a constitutional convention may be called when 32 of the 48 states petition Congress. To become law the amendment must be ratified by the legislatures of 36 states.

It is possibly significant that attorneys general of 40 of the 42 states represented voted for state ownership of lands beneath navigable waters at the recent annual convention of the National Association of Attorneys General. Attorney General J. E. Taylor of Missouri, President Truman's home state, cast the only vote against the resolution. Attorney General Robert E. Smylie of Idaho abstained from voting.

General Confiscation Feared

The Texas tidelands resolution was introduced by Sen. John J. Bell of Cuero. In speaking before the Senate in behalf of his bill, Bell declared that if the federal Government can "confiscate the tidelands . . . it can confiscate, if it so desires, the property of every individual in this Union." He stated that the California decision has "entirely changed our concept of the law of property." Bell added that the federal Government is taking the offshore oil properties away from the people of Texas, not the oil companies.

Bell's proposed constitutional amendment reads as follows: "The powers of the United States for conducting United States relations with foreign nations shall not be extended to include matters of internal sovereignty. The decision of the Supreme Court of the United States in the case of United States vs. California, 332 U. S. 19, insofar as it announces the doctrine of paramount rights and dominion on the part of the United States as against the state of California is hereby repudiated."

Several other items of interest to the oil industry developed out of the Texas legislature this past week. High on the list was the announcement by Rep. C. S. McLean of Eagle Lake that he is preparing a bill to levy an additional tax on some natural resource. McClellan would not say which natural resource, but it is widely speculated that it will be natural gas. The Eagle Lake man introduced a measure in the last session which would have levied a tax on natural gas. The tax asked was 1.85 cents per M.c.f. McClellan is asking for the tax to provide money for building and maintaining roads now under county jurisdiction.

An export tax on natural gas going out of the states is still being discussed, but no bills have been offered to date. Legislators are afraid such a tax would be ruled out on constitutional grounds.

Gas Standard Proposed

A bill setting up a standard measure for natural gas was introduced in the Senate by Sen. Wardlow Lane, Center. A cubic foot of gas or standard cubic foot of gas would be defined as the volume contained in one cubic foot of space at a pressure of 14.65 lb. per square inch absolute and a temperature of 60° F. Lane listed the following as "unjust results" of the present lack of a standard measure: (1) Billions of cubic feet of gas each year are going tax free after being produced at one pressure and sold at another; (2) landowners and many producers, unfamiliar with engineering terms, sign contracts embodying inequitable and unfair measurement practices and (3) use of different systems of measurement make it practically impossible for a true amount of gas produced to be determined either by the tax-collecting agencies or the landowner.

Another legislative development of the week was the action of the Texas Independent Producers and Royalty Owners Association condemning a voluntary-unitization bill sponsored by Sen. George Moffett, Chillicothe.

Gov. Beauford H. Jester in his inaugural address emphasized the tidelands fight by saying, "Texas and the other states must exert every effort to stem the tide of centralization of governmental power, authority, regulation, taxes, and property in the hands of the federal Government. The signs and trends of this tide are ominous. Texas is now faced with the danger of the taking of its tidelands and submerged lands by the federal Government in the face of its republic and state ownership."

Along this line, the state Board of Control recommended that the legislature raise from $6,000 to $18,000 a year the Texas contribution to the Council of State Governments. This group is one of the leaders in the fight to preserve state ownership of the tidelands.

East Texas Bottom-Hole Pressure Shows Decline

KILGORE, Tex.—Bottom-hole pressure in East Texas oil field declined an average of 3 psi. during the year 1948, while gross allowable for the field was approximately 108,000,000 bbl. of oil, according to the East Texas district office of the Texas Railroad Commission.

Estimated average bottom-hole pressure in the field as of January 1 was 1,008.39 psi., determined from pressure tests on 100 key wells at the uniform depth of 3,300 ft. below sea level. The comparable figure for last year was 1,011.39 psi.

Pressure tests on the key wells revealed a high of 1,179 psi. and a low of 506 psi., with 19 wells having pressure in excess of 1,100 psi., and 27 wells falling below 1,000 psi.

East Texas field is now in its 19th year of production, and had 22,424 producing wells reported as of January 1, according to the commission. It still leads all fields in the northeast quarter of Texas in the number of drilling operations, although all drilling is within proven areas.

Hearing on Michigan Well Rules Set for February 2

A public hearing before the Michigan supervisor of wells and the oil advisory board has been scheduled for February 2 in Lansing.

Listed on the agenda for this meeting will be: consideration of a change in the daily oil allowable for wells in Pentwater field, Mason and Oceana counties, and in Coldwater field, Isabella County; establishment of a well-spacing pattern and proration allowable for Dundee wells in the new Isabella field, Isabella County; change in the spacing pattern for wells to be drilled in Essexville field, Bay County, and Akron field, Tuscola County; and a revision and modernization of general rules and regulations governing the spacing, drilling, deepening, and plugging of wells for dry natural gas, and general regulations covering oil and gas operations.

Water Flooding Approved

HOUSTON.—S. L. Digby, commissioner of conservation for Louisiana, has announced approval for a full-scale water-flood program in the Camerina "D" sand of West Hackberry field to be conducted by Stanolind Oil & Gas Co.

this week

FORECASTS—Demand continues to increase but at lower rate. . . . Drilling, refinery runs, construction of pipe lines and refineries will remain at high levels. . . . These and other forecasts are contained in the annual statistical section of this issue. . . . ¶Also given are detailed reports on record achievements of all branches of the petroleum industry. . . .

CRUDE OIL—Further reduction in crude allowables in Texas during February ordered by Railroad Commission. . . . Overproduction given as cause. . . . Other states face similar problem. . . . ¶Independent producers aroused over imports of foreign crude. . . . Blame imports for domestic cut-backs, rising crude storage, softening of prices. . . . Congress may be asked to limit imports. . . .

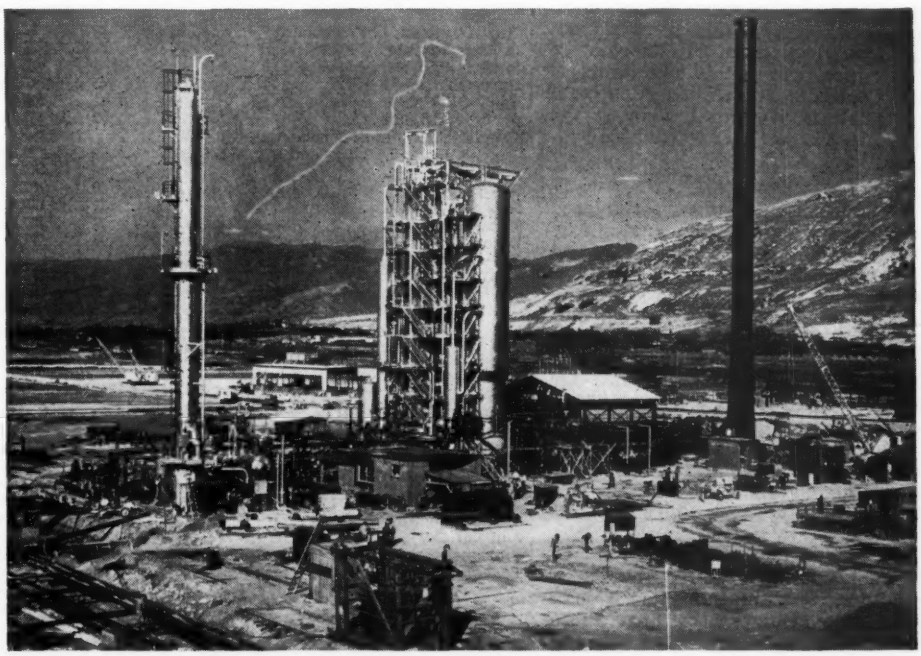
OFFSHORE—Texas Legislature initiates constitutional amendment to repudiate Supreme Court decision on tidelands. . . . Fears federal confiscation of other property. . . . ¶But industry continues rapid pace of development off Gulf Coast despite possibility of federal control. . . . Survey shows leases made by Louisiana and Texas and offshore operations in progress. . . .

TRENDS—Kerosine production reached new high for current heating season for week ended January 15. . . . Kerosine stocks dropped 775,000 bbl. during the week reflecting generally lower temperatures. . . . Distillate and gas-oil stocks dropped 3,450,000 bbl. or nearly a half million barrels per day. . . . Drop in distillate and gas-oil stocks was about 44 per cent of production for week ended January 15. . . . ¶U. S. crude-oil production for week ended January 22 showed decline of 7,850 bbl. per day averaging 5,248,590 bbl. daily. . . . ¶Severe weather curtailed field operations. . . . Total completions for week ended January 22, 719 as compared to previous week of 834. . . . Weekly average completions for the first 3 weeks of this year total 766. . . . ¶Despite low temperatures heating and burning-oil market remains sluggish. . . . Declining price levels for some products continue. . . . ¶Third price reduction in Pennsylvania Grade crude is announced. . . .

INTERNATIONAL—Phillips moving in several rigs following discovery just west of Roble field, Eastern Venezuela. . . . Plans nine more wells in the area this year. . . . ¶Creole's November production in Venezuela drops about 4 per cent below October figure. . . . ¶State Department gains important assurances regarding treatment of private foreign investments in Latin American countries. . . .

REFINING—Motor-fuel consumption in 1948 increased about 9 per cent over 1947. . . . ¶Ethyl-ether capsule developed to aid cold-weather starting of diesel and gasoline-powered equipment. . . . ¶Refinery Engineering Co. gets contract for design and construction of Saskatchewan refinery. . . . ¶Geological Survey report shows considerably more oil reserve in oil shale beds of Colorado. . . .

PIPE LINES—Socony-Vacuum opens first products pipe line in Maine. . . . ¶Mid-Continent Pipe Line Co. takes over all connections in Fitts-Jesse areas of Oklahoma.



New refineries like this one of Salt Lake Refining Co. which went on stream in December were part of the tremendous expansion program which enabled the oil industry to set new records in 1948. The extent of this expansion and the prospects for 1949 are sketched in the special review and forecast section of this issue which begins on page 169

Drilling Proceeds Off Gulf Coast Despite Federal Cloud on Titles

by Leigh S. McCaslin, Jr.

HOUSTON.—The current Supreme Court battle over the so-called tidelands has had little effect on the major drilling and exploration campaign in the Gulf of Mexico and at present there are 29 active oil operations in a belt 30 miles wide off the coasts of Louisiana and Texas.

Drilling operations continue at those tests under way, new locations are being announced, and construction work is proceeding on new offshore drilling platforms. Requests are still being made to the Army Engineers in New Orleans and Galveston for permission to erect new platforms. The State of Louisiana has announced an offshore lease sale since the federal Government's petitions to the Supreme Court. From all of this, the casual observer could conclude that the oil industry is indifferent to the state-federal fight.

This conclusion is false, however. Looking at the long-range picture it is apparent that many companies have either retarded or simply not begun their development of tideland leases. In fact, some oil-company executives have made public statements to the effect that their companies are awaiting a settlement of the dispute over ownership.

Leasing of the two states to date has been confined to a belt 31.4 miles wide. Louisiana claims territory only out to this point. Texas, however, lays claim off its coast to the entire area within the limits of the Continental Shelf. The Continental Shelf is 140 miles wide at the Texas-Louisiana line.

Rental Is Incentive

The primary incentive for a good part of the activity now under way is probably the high rental charged by Louisiana. Annual lease rental is one-half of the bonus paid when the lease is originally obtained. The competitive bidding on offshore leases has produced some large bonuses. Superior Oil Co. paid $515,000 bonus for mineral rights on a 5,000-acre tract about 25 miles off shore in the West Cameron area. Hence, Superior's annual rental on this one lease is $257,500, and this company has around 125,000 acres under lease in addition.

Other factors, of course, have brought about the considerable activity under way in the area. It is a well-accepted hypothesis that there are millions—even billions—of barrels of oil underlying the waters of the gulf. Geophysical work has already located a number of salt domes such as produce large quantities of oil on the land belt adjacent to the gulf. Better yet, the drill has opened up nine oil or gas-distillate producing areas to date.

Most of the drilling under way off the Louisiana coast is on leases obtained prior to June 23, 1947, the date of the Supreme Court decision holding that the federal Government has paramount rights to California's marginal sea. These leases are felt to be particularly secure. In fact, the U. S. Attorney General in his current petitions to the Supreme Court is asking that the states be accountable only for tidelands money derived by them subsequent to June 23, 1947.

Louisiana has granted far more offshore leases than Texas. At the present time, in fact, Louisiana has six times more acreage under lease than Texas. The Louisiana Minerals Board is going ahead with offshore leasing despite current action of the federal Government. Another lease sale was scheduled for January 28. Little interest in the sale has been evidenced to date by oil operators, according to C. J. Bonnecarrere, secretary to the board.

Texas has held only one offshore sale, and this was in November of 1947. Bascom Giles, land commissioner for the state, attributes this comparative inactivity to two factors. The most important is the government tidelands suit against the state. While the board feels that it might receive some fairly good bids for offshore leases, it is sure that once the cloud on the title has been removed these same leases would likely bring a much better bid.

Texas Law Restrictive

The second factor is the restriction now in effect on geophysical work in offshore areas. At present, exploration work cannot be conducted on unleased areas. A bill permitting this is expected to be presented to the Texas Legislature, which is now in session.

CURRENT LOUISIANA OFFSHORE LEASES

	No. of leases	Acres	Average cost per acre	Bonus paid
Barnsdall	5	9,989.06	$3.58	$35,808.00
Barnsdall, Seaboard, Callery & Hurt	20	50,872.76	9.12	463,844.30
California Co.	59	173,754.71	12.71	2,208,333.00
Continental Oil Co.	1	2,500.00	15.50	38,750.00
I. J. Goode	8	18,611.00	7.52	139,936.10
Gulf Refining Co.	6	18,374.00	12.42	228,154.25
Humble Oil & Refining Co.	45	170,941.36	21.73	3,714,953.39
Hunt Oil Co.	2	5,690.00	15.60	88,764.80
Wallace B. Jayred	1	1,248.00	20.03	25,000.00
Kerr-McGee Oil Ind., Inc.	9	34,762.00	16.02	557,051.00
Kerr-McGee, Phillips and Stanolind	11	55,000.00	7.77	427,500.00
Magnolia Petroleum Co.	69	249,851.98	5.35	1,335,887.21
Pan American and Seaboard	27	62,936.86	14.72	926,347.91
Phillips Petroleum Co.	22	78,888.42	20.96	1,653,432.00
Phillips and Kerr-McGee	1	2,500.00	8.00	20,000.00
Pure Oil Co.	55	146,227.75	6.79	992,425.00
Shell Oil Co., Inc.	61	205,193.51	9.33	1,915,438.37
Sohio Petroleum Co.	2	7,207.00	5.31	38,269.17
Standard Combine (Continental, Tide Water, Atlantic Refining and Cities Service)	99	405,855.40	3.99	1,617,912.00
Stanolind	65	185,243.86	9.04	1,674,959.87
Sun Oil Co.	20	57,192.50	15.54	888,936.93
Superior Oil Co.	38	129,571.44	21.27	2,756,215.93
Texas Co.	27	100,857.34	9.42	950,167.61
Union Oil Co. of California	5	17,910.13	11.52	206,249.92
Total	658	2,191,179.08	$10.43	$22,860,312.48

CURRENT TEXAS OFFSHORE LEASES

	No. of leases	Acres	Average cost per acre	Bonus paid
Brazos Oil Co.	3	1,644.00	$2.98	$4,965.00
Humble Oil & Refining Co.	82	99,131.00	15.70	1,555,961.06
Humble, Ohio, and Melban	4	5,760.00	17.09	98,458.80
Melban Oil Co.	85	117,570.00	11.19	1,315,218.58
Phillips Petroleum Co.	3	2,686.00	17.57	47,196.00
Roxo Oil Co.	1	320.00	8.25	2,640.00
Stanolind	40	57,440.00	47.65	2,736,936.60
Sun Oil Co.	4	2,774.00	31.71	87,964.00
Tidelands and Superior	52	65,280.00	10.15	662,720.00
Texas Co.	24	17,040.00	42.49	724,048.00
Total	298	369,665.00	$19.57	$7,236,108.04
Grand total, Texas and Louisiana	956	2,560,844.08	$11.75	$30,096,420.52

Annual rental on Texas offshore leases is much lower than that of its neighbor, Louisiana. It varies from $1 to $5 per acre as determined by the land board.

The statistical picture of Texas and Louisiana offshore development can be presented, in brief, as follows:

Oil industry investment—an estimated $70,000,000.

2,191,179 acres under lease for a $22,860,312 bonus in Louisiana.

369,665 acres under lease for a $7,236,108 bonus in Texas.

Six oil and three gas-distillate discoveries.

Twenty-nine active drilling operations and announced locations.

125,000 bbl. of oil produced to date.

Some 98 leases on 356,366 acres have been terminated in Louisiana. Bonuses for this acreage plus royalties collected on oil bring the total collected by the state on its offshore lands to $34,259,638.

A detailed picture of offshore leasing and drilling can be obtained from the accompanying tables. It can be seen that 24 companies, individuals, or combinations of companies have leases off Louisiana as contrasted with 10 off Texas.

Legality of Suit on Tidelands Is Challenged by Texas, Louisiana

WASHINGTON. — Texas and Louisiana last week filed vigorous objections with the Supreme Court against the suits brought by Attorney General Tom C. Clark last month to seize their tidelands for the Government.

Attorney General Price Daniel of Texas protested Clark's strategy in seeking to bring an original suit in the highest court, contending that Congress first should assert federal jurisdiction over the tidelands and then the matter should be litigated before a federal district court in Texas.

In the answer of Louisiana, Attorney General Bolivar E. Kemp, Jr., told the court flatly it had no jurisdiction "because Louisiana is a sovereign state which cannot be sued without its consent, and which has not consented to be sued herein."

While Daniel asserted Congress should act before proceedings are brought, he argued that even such action could not divest Texas of title to its lands because Texas was an independent republic prior to joining the Union and the annexation agreement conveyed no land or proprietary interests to the United States.

Daniel pointed out that President Truman's proclamation of federal jurisdiction over the Continental Shelf in 1945 did not make any claim to the offshore lands. No legislation has ever been enacted dealing with title to the tidelands.

"Until and unless the Congress makes assertion on behalf of the United States, it is respectfully urged that the Attorney General is invading the province of the Congress and is without authority to bring this action," he argued.

"Even if the court should not fully agree with us on this point, it is urged that this objection would justify the court in using its discretion by awaiting action of Congress in this political field before permitting the Attorney General to file this suit as an original action in this court."

Daniel told the court that Texas concedes that the federal Government's powers over the tidelands are the same as over all other waters and lands within the nation, but contended that new extensions of those powers must be made by Congress and not by the Attorney General.

Local Trial Asked

If, following congressional action, the Government wishes to proceed with the case, he said, it should be filed in a court within the state, which would have the advantages of familiarity with its real-property law, based upon Spanish and Mexican law, and proximity to witnesses and documents.

Louisiana's contention that the federal Government cannot sue it without its consent is not affected by the fact that the Supreme Court in the past has adjudicated cases brought against the states by the Government, Kemp declared.

Although the court ignored the fact in a case against Texas which has served as a precedent, the constitutional convention which wrote the Constitution rejected the proposition that a state could be sued without its consent. In another case, against North Carolina, he pointed out, the

(Continued on page 395)

LOUISIANA OFFSHORE OPERATIONS

Company, parish and area; well description—	Remarks
Kerr-McGee Oil Industries, Inc.:	
Cameron, West Cameron; 1 State Lease 1123, Block 33	Drilling below 2,020 ft.
Terrebonne, Ship Shoal; 1 State Lease 750, Block 28	Fishing at 11,561 ft., TD 14,451 ft.
Terrebonne, Ship Shoal; 5 State Lease 754, Block 32	Drilling 1,750 ft.
Magnolia Petroleum Co.:	
Iberia, Eugene Island; 1 State Lease 686, Block 110	Drilling 9,675 ft., 13,000-ft. test.
St. Mary, Eugene Island; 2 State Lease 679, Block 77	Drilling 2,900 ft., 10,000-ft. test.
Terrebonne, South Pelto; 1 State Lease 791, Block 11	Location, 12,000-ft. test.
Terrebonne, Ship Shoal; 2 State Lease 766, Block 72	Piling, 13,000-ft. test.
Humble Oil & Refining Co.:	
Jefferson, Grand Isle; B-1 State Lease 797, Block 18	Location, 7,000-ft. test.
Jefferson, Grand Isle; D-1 State Lease 798, Block 18	Drilling 4,643 ft., 10,000-ft. test.
Jefferson, Grand Isle; C-1 State Lease 803, Block 16	Platform.
Jefferson, Grand Isle; 1 State Lease 804-D, Block 16	Drilling 5,556 ft., 5,500-ft. test.
Plaquemines, W. Delta; 1 State Lease 819, Block 30	Testing, TD 7,500 ft.
Plaquemines, W. Delta; 2 State Lease 819, Block 30	Platform up, waiting on rig, 14,000-ft. test.
Plaquemines, Tiger Pass; 1 State Lease 818, Block 77	Fishing, TD 10,136 ft.
Plaquemines, Tiger Pass; 2 State Lease 818, Block 27	Location, 11,000-ft. test.
Terrebonne, S. Timbalier; 1 State Lease 1027, Block 34	Drilling 7,707 ft., 14,000-ft. test.
The California Co.:	
Lafourche, Marchand; 1 State Lease 1366, Block 2	Building platform, 5,000-ft. test.
Lefourche, Marchand; 1 State Lease 1367, Block 3	Building platform.
Plaquemines, Main Pass; 2 State Lease 1278, Block 69	Drilling 5,315 ft., 5,860-ft. test.
Superior Oil Co.:	
Vermilion, Vermilion; C-1 State Lease 1106, Block 76	Working on structure, 12,000-ft. test.
Stanolind Oil & Gas Co.:	
Cameron, W. Cameron; 1 State Lease 1133, Block 45	Testing at 4,869-74 ft., TD 9,728 ft.
Terrebonne, Ship Shoal; 1 State Lease 757, Block 38	Location, 13,000-ft. test.
Barnsdall Oil Co.:	
Plaquemines, Breton Sound; 2 State Lease 1224, Blk. 29	Location.
Shell Oil Co., Inc.:	
Plaquemines, South Pass; 1 State Lease 1355, Block 80	Spudded, 12,000-ft. test.

TEXAS OFFSHORE OPERATIONS

Company and county; well description—	Remarks
Humble Oil & Refining Co.:	
Brazoria; 1 State Tract 278	TD 9,500 ft., conditioning mud.
Melban Oil Co. (Ohio Oil Co. and Benedum-Trees):	
Brazoria; 1 State Tract 248	Preparing to resume drilling, TD 7,675 ft., 13,000-ft. test.
Stanolind Oil & Gas Co.:	
Galveston; 1 State Tract 27	Location.
Galveston; 1 State Tract 144	Piling.
Galveston; 1 State Tract 245	Platform.

International

WORLD-WIDE OIL DEVELOPMENTS

Phillips Begins Active Program Following Venezuelan Discovery

PHILLIPS OIL CO. is moving several additional rigs into its concession block immediately west of Roble field in Eastern Venezuela where the company recently made an important discovery.

Phillips B-1 well, its first drilling undertaking in the 130,000-acre concession, flowed on production tests at the rates of 1,500 bbl., 500 bbl., 300 bbl., and 500 bbl. from four successive zones. The oil sands in the Oficina formation between 7,740 and 8,500 ft. had a total thickness of 165 net feet.

The test of the top zone was made on ⅜-in. choke through 15 ft. of perforations. Gravity of the oil was 40°. Tests of the three lower zones all were made on small chokes, and gravity of the oil ranged from 41° to 45°.

The well was reported to have a pressure of about 2,500 psi. with a low gas-oil ratio. The discovery on the flank structure follows considerable geological and geophysical work in the area.

Phillips is planning nine more wells in the area this year. The discovery is expected to be produced at between 2,500 and 3,000 bbl. daily as a dual completion. A company announcement said additional equipment had recently been shipped to Venezuela and pointed out there are two pipe lines in the vicinity of the discovery.

Phillips Oil, a wholly owned subsidiary of Phillips Petroleum Co., holds considerable acreage in other areas in Eastern Venezuela. About 70 miles to the east is Mata Grande where production last year was about 2,000 bbl. daily with 22 wells now completed. Production here was originally limited by lack of pipe-line facilities. The company also has a sizable block north of the discovery area.

Creole's Venezuelan Production Drops

CREOLE PETROLEUM CORP.'s production of crude oil in Venezuela in November dropped about 4 per cent below the preceding month, although November did not reflect in full the recent production cutbacks made by the company because of the weak fuel-oil market.

Creole's November output was reported at 624,403 bbl. daily against 649,627 bbl. daily in October. Nearly all the reduction was in the Lake Maracaibo region where November output of the company was 459,845 bbl. daily. Other production in November was Cumarebo, 4,842 bbl. daily, and Eastern Venezuela, 159,716 bbl. daily.

Creole's drilling activity was virtually unchanged in November with an average of 32 rigs operating. Eleven oil wells and one dry hole were completed. Exploration wells were two in the Mara area, one oil and one dry, with an average depth of 10,484 ft., and one oil well in the Roble area with a depth of 11,829 ft.

An average initial production of 7,930 bbl. daily was listed for the successful exploration well in the Mara area. Mara field, opened in 1945 northwest of Lake Maracaibo, produces from the prolific deep Cretaceous limestone. Average initial production of the Roble exploration well was 599 bbl. daily.

Creole reported crude oil refined in November at Caripito averaged 62,205 bbl. daily and 19,333 bbl. daily at La Salina.

Venezuelan Strike Ends; Oil Operations Resume

Oil operations in the Maracaibo basin area of Western Venezuela returned to normal January 20 following a strike called in protest to the military junta which took over the government in November.

The walkout ranged up to 3 days in duration in various areas. Its termination followed a government decree threatening the workers with loss of benefits and rights unless they went back to their jobs.

The strike drastically curtailed production while it was in effect. While no exact data were available, it was estimated more than 1,200,000 bbl. of production was lost as a result.

Saudi Arabia Crude-Oil December Output Declines

The upward trend in crude-oil production in Saudi Arabia was reversed in December when daily average output dropped 15,421 bbl., or about 3 per cent.

December production amounted to 14,457,619 bbl., or an average of 466,375 bbl. daily, according to an announcement of Arabian American Oil Co. Crude processed at the Ras Tanura refinery averaged 118,063 bbl. daily during December.

Production for the entire year totaled 142,852,989 bbl., an average of 390,309 bbl. daily. Crude run in the refinery averaged 123,186 bbl. daily.

Hungarian Court Reduces Papp's Sentence to Life

The death sentence given Dr. Simon Papp, former manager of the Hungarian affiliate of Standard Oil Co. (N.J.) on charges of economic sabotage has been reduced to life imprisonment by the Hungarian Supreme Court.

Papp's trial and action against other company officials was strongly protested by the U. S. State Department which said the cases were fraudulent and malicious.

Papp, a Hungarian, formerly was chief geologist and until January 1 general manager of Hungarian American Oil Co. (MAORT).

Concessions to Foreign Capital Gained at Bogota, Report Says

by Bertram F. Linz

WASHINGTON.—Important concessions for the protection of American oil and other capital were wrested from the Latin American countries by the United States last year in the negotiation of an Inter-American Economic Cooperation Agreement at Bogota, Colombia, one of several agreements perfected during the month-long conference of American states.

Although several countries entered reservations on controversial issues, State Department officials point out that the agreement provides a number of general and specific assurances regarding the treatment of private foreign investments, while also assuring that such investments shall not be used as a means of interfering in domestic politics or for prejudicing the security or fundamental interests of the Latin American countries.

Negotiation Was Difficult

The negotiation of a satisfactory agreement, the department explained in a 317-page report on the conference, was made difficult by the strong feeling in a number of countries that their economic development should be carried forward and given its principal impetus, not by private initiative as it is known in the United States, but through governmental development corporations financed by foreign and local government capital or, at the most, mixed governmental and private financing, with a considerable degree of government influence and control in planning and operations. Another factor was a feeling in some countries, carried over from years past, that to open the doors wide to foreign capital would lead to abuses, interferences with domestic politics, and other undesirable developments.

While oil did not formally enter into the consideration of the agreement, it was a subject of major importance to such countries as Venezuela and Colombia and of great interest to other countries which have oil potentials, and reportedly cropped up frequently in the discussions.

The United States delegation also was keenly interested in oil, and its proposals were framed so as to provide a favorable atmosphere for that industry as well as others which may engage in Latin American operations.

The agreement recognized the principle that foreign capital must receive equitable treatment, and the states agreed not to take unjustified, unreasonable, or discriminatory measures impairing the rights or interests of foreigners in the enterprise, capital, skills, arts, or technology supplied by them.

They agreed further that, with respect to employment and employment conditions, just and equitable treatment should be accorded to all personnel, national and foreign, and recognized that, for private capital to contribute as much as possible to the development and progress and the training of nationals, it is desirable to permit enterprises to employ and utilize the services of a reasonable number of technical experts and executive personnel without regard to nationality, a provision which would permit United States oil companies to use Americans in such posts.

Some difficulty was encountered in writing a provision for continued guarantees for the validity of contractural arrangements between Latin American governments and individual United States corporations, but a compromise was reached reaffirming the rights of the states to establish, within a system of equity and effective legal and judicial guarantees, measures to prevent foreign investments from being used directly or indirectly to intervene in local politics or threaten the security or fundamental interests of the countries receiving the investments, and to establish standards regarding the extent, conditions, and terms upon which future foreign investments will be permitted.

Expropriation a Problem

The question of expropriations also presented great difficulties, and opposition was offered to the United States proposal that there should be no expropriation of foreign-owned propery "except for clearly defined public purposes and accompanied by prompt, adequate, and effective compensation."

Some delegations objected to the inclusion of the words "foreign owned" as setting up more favorable conditions for foreign property than for national; objections were also raised to expropriation only for clearly defined public purposes, based on constitutional provisions, and both were finally omitted. The most controversial point was that of compensation, which the Mexican and Venezuelan delegations held was in conflict with their constitutional provisions.

As finally adopted, the article provided that "the states shall take no discriminatory action against investments by virtue of which foreign enterprises or capital may be deprived of legally acquired property rights, for reasons or under conditions different from those that the constitution or laws of each country provide for the expropriation of national property. Any expropriation shall be accompanied by payment of fair compensation in a prompt, adequate, and effective manner."

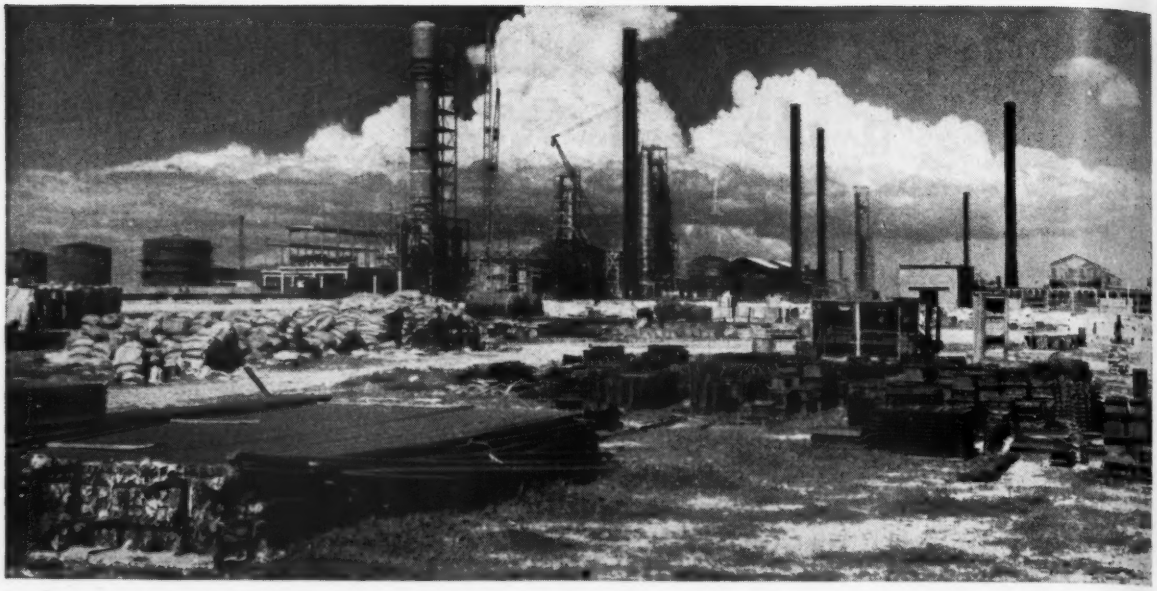
The final article in the chapter relating to investments dealt with taxation. Several countries proposed that income should be taxed only in the country in which it was produced. The United States consistently opposed this but indicated a willingness to see what measures, short of acceptance of this principle, might be taken in order to stimulate foreign investment through liberalization of taxes as applied to income derived from the foreign operations of business corporations.

Eventually the United States view prevailed, and the article merely provides that each state shall, within the framework of its own institutions, seek to liberalize its tax laws so as progressively to eliminate double taxation on income derived from foreign sources and to avoid unduly burdensome and discriminatory taxation without creating international means for tax avoidance.

There were a number of reservations to and interpretations of the agreement by certain delegations. In the cases of Mexico, Guatemala, and Venezuela there were express reservations to the provisions regarding prompt, adequate, and effective compensation for expropriation, or to the entire article. Other countries, including Ecuador, Argentina, Uruguay, Cuba, and Honduras, made it clear that in any case of a legal conflict between the provisions of the agreement and the constitution of the country, the latter would prevail, and also that in no case would foreigners receive a preferred status over nationals in the operation of the laws.

Egypt Standard Reports New Discovery on Sinai

Another oil discovery on the west coast of the Sinai Peninsula in Egypt was reported this week. Officials of Standard Oil Co. of Egypt, an affiliate of Standard Oil Co. (N.J.), said in Cairo that the company had found production in the Wady el Fyran but that it would be several months before the importance of the discovery could be established. The discovery was reported now producing 150 bbl. daily.



A general view of Shell's Cardon refinery under construction and nearing completion. The new plant is expected to go on stream early this year. Three years ago this site was a barren, waterless tract of land

Once Barren Tract Now Site of One of World's Most Modern Refineries

AFTER 36 months of constant effort and problems of supply, there has arisen one of the world's most-modern refineries on a once-barren, waterless tract of land on the Paraguana Peninsula at Cardon, where Shell Co. of Venezuela, Ltd., is completing a community and industrial area capable of accommodating 10,000 persons and eventually increasing, by 50,000 bbl. a day, Venezuela's refining capacity. The refinery is expected to go on stream in early 1949.

Since the pioneering group of five persons first landed at the Cardon site in March 1945, the construction of the refinery and model city to house its employes has consumed more than 62,000,000 work-hours, resulting in the completion of 986 homes for employes, 26,000 sq. m. (280,000 sq. ft.) of warehouses and stores, and 120 km. (73 miles) of asphalt roads, all in addition to the complete construction of most of the refinery units.

As Paraguana is virtually without water, Shell, in conjunction with Creole Petroleum Corp., which is also building a refinery on the peninsula, is building a permanent water pipeline system scheduled for use in about 1½ years. Thirty-six million liters (about 226,000 bbl.) of water per day will be brought in from a distance of 110 km. (68 miles) on the mainland, making it the longest water-conveyance system in Venezuela. Pending completion of this aqueduct, water for industrial purposes is being imported in tankers with a capacity of 10 million liters (about 63,000 bbl.) each trip. There are also water-distilling units in operation, which convert sea water into pure water for domestic purposes.

International
WORLD-WIDE OIL DEVELOPMENTS

Shell's new refinery on Paraguana Peninsula off the western coast of Venezuela will be the first of several new Venezuelan refineries to go in operation. It will add about 43 per cent to the present 116,000-bbl.-daily capacity of the Venezuelan refining industry. Nearby on Paraguana Peninsula Creole Petroleum Corp. is building a 60,000-bbl.-capacity plant. This description of the Shell refinery was prepared and photographs furnished by the Shell organization.

In the refinery area a total of 127 tanks for storing both crude oil and finished products have been completed. Also almost finished and ready for operation are many of the refinery units, including the crude-distilling plant, the doctor-treating plant, the ethyl-blending plant, the vacuum-distillation plant, the redistilling unit, the cracked-products separation plant, two thermal-cracking plants, and a thermal-reforming plant.

Under construction is a laboratory building which will test samples of the various products, and analyze water and chemicals.

A network of subterranean ducts has been installed to convey electricity, steam, water, fuel, and air to the various refinery units. In contrast to most established refineries, which utilize steam as motive power, the Shell refinery employs electricity almost exclusively. The electric power plant has a capacity of 30,000 kw. Ultramodern steam-generating plants have also been installed to supply steam for the power plant and certain refinery operations.

More than 40,000 varieties of articles, ranging from complete welding outfits to air compressors, are stored in the warehouses.

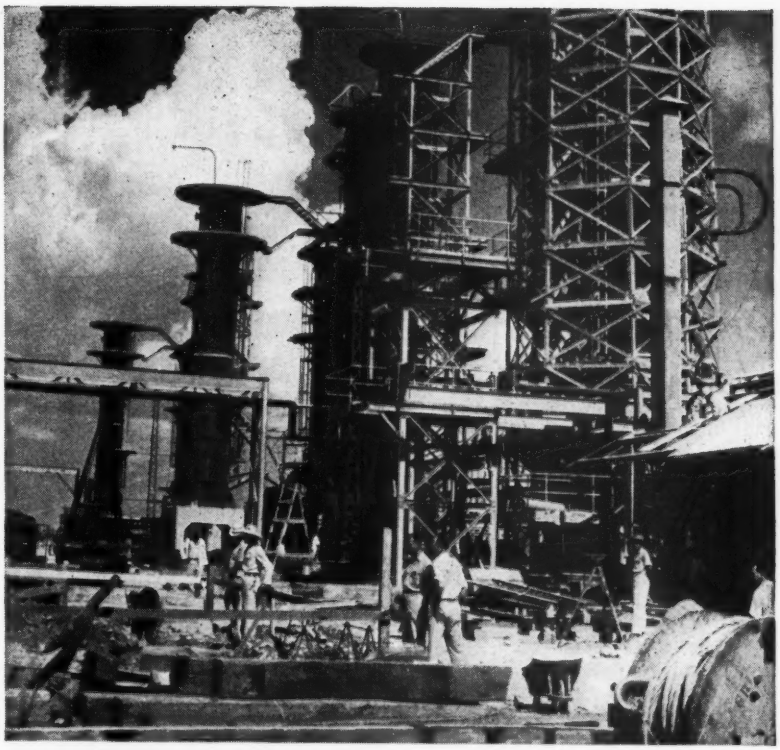
Two jetties, each 450 m. (492 yd.) long, and considered the most modern of their type, are in operation. Each jetty utilized 604 reinforced concrete piles, the length of each pile ranging from 20 to 26 m. (22 to 28.4 yd.). One of the jetties consumed more than 1,800 tons of iron and 4,000 tons of cement.

Community Area

The residential section of Cardon has proven that dry, cacti-spotted areas can become verdant and productive with time and effort. Now that water is less of a problem, citizens of the new community are turning sandy stretches into gardens and lawns and many of the homes, which were completed earlier, are covered with grapevines and climbing ivy. By the end of January more than half of the hundreds of dwellings planned for Cardon, will have been completed. Self-sufficient in almost every way, this small city boasts three modern schools with a capacity of 1,360 pupils. One school, however, is currently being used for a hospital, pending the completion of a four-floor permanent one. Nearly ready for use is an excellent policlinic. A Plaza Bolivar (found in most Venezuelan towns), is also the focal point here. In the center of the plaza is a bust of the liberator, Simon Bolivar. Nearby is a Roman Catholic Church, having a capacity for 300 people. In this same area there is a modern, open-air theater, a huge restaurant, a pharmacy, barber and beauty shop. The community offers further services including a modern dry-cleaning and laundry establishment, regular bus service, and the most up-to-date trucks for the daily collection of refuse. The water and sanitation systems vie with the most modern anywhere.

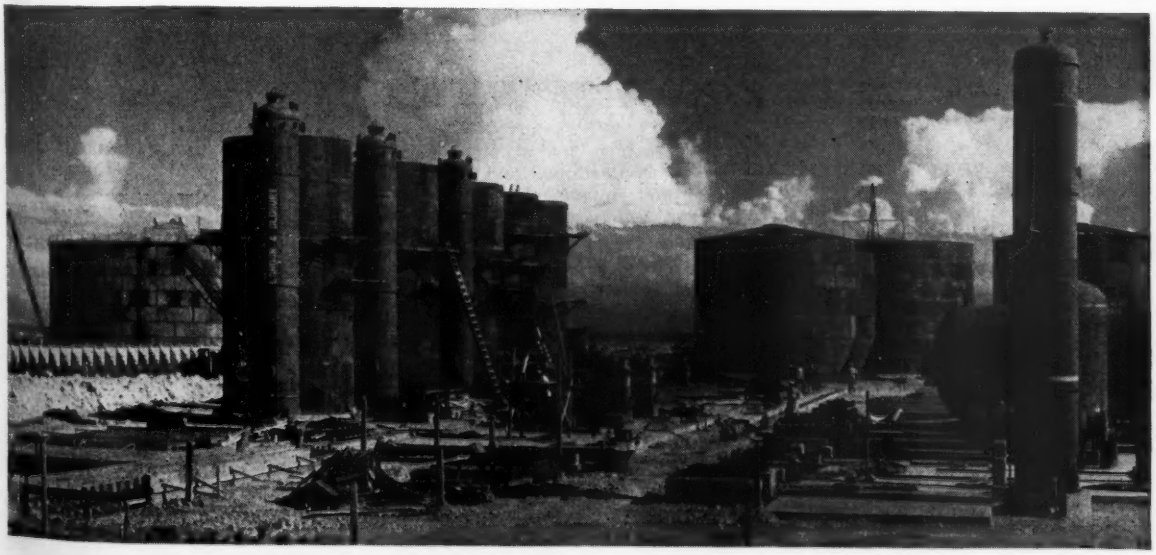
The commissary occupies a floor space of more than 3,000 sq. m. (32,200 sq. ft.) and operates principally as a vast self-service store, selling over 900 different items and employing more than 100 people. A bank, post office, and various specialty shops are scheduled for future construction.

Recreation is amply provided through three clubs one of which overlooks the sea. There are two bathing beaches, tennis courts, and athletic fields for baseball, softball, and football. A golf course will be constructed in the near future.



Flashing column of the reforming unit with scaffolding for mounting insulation. In the background may be seen columns of cracking unit No. 1 and No. 2

The doctor-treating unit where gasoline distillate from the distilling unit is chemically treated with the so-called doctor solution which neutralizes undesirable sulfur components



WASHINGTON WATCHING

BY BERTRAM F. LINZ

Aggressive on Oil

WASHINGTON. — Congressional hearings on government oil activities and programs will take a somewhat different slant this year.

During the 2 years of the Eightieth Congress, the Republican-dominated committees looked with some skepticism upon the administration's oil projects, and while they were not always hostile to new ideas neither were they receptive to plans for heavy expenditures in relatively untried fields. And, of course, no Republican would put himself out to boost the administration's political stock by working for something that could redound to the credit of his own party when a Republican president was elected in 1948.

All that is past now, and the word is out that government men who will testify before committees this year are to go on the aggressive where last session they were on the defensive, with assurance that very sympathetic consideration will be given their oil projects.

The most important oil matters will come before committees whose chairmen are prepared to play ball, in the case of Sen. Joseph C. O'Mahoney of Wyoming, chairman of the interior and insular affairs committee, to the limit. The House interstate commerce committee is expected to be more independent, but that group always has attempted to deal with oil realistically and will go along with any program that gives promise of improving our oil position.

As usual, a number of other committees will find opportunity to get into oil investigations — the small business committees to find out how the independents are faring; the armed services committees in connection with military requirements and devolpment of the national petroleum reserves; the foreign relations committee from the angle of oil's place in the European Recovery Program, and so on down the line—so that oil is destined again to be thoroughly investigated.

Red Cloud

PAUL G. HOFFMAN, chief of the Economic Cooperation Administration, has voiced a sober warning to those who believe that Russian will come to acceptable terms with the democratic world.

Returning from a round-the-world survey of our foreign aid programs, Hoffman declared his absolute conviction that an all-out drive is now on by the Russian Politburo for world domination—a drive, he said, that is being waged with an intensity and determination that makes Hitler's efforts seem amateurish by comparison.

From other quarters comes support for Hoffman's view. Reports to Washington warn that the Russians may be expected to raise new frictions in northern Iran, the scene of previous, but unsuccessful, efforts to get a toehold in Middle East oil. Such an adventure would be in line with the Russian policy of hitting first here, then there, in an attempt to keep the whole world disturbed and seek out the soft spots where the seeds of disorganization and revolution may sprout.

The American people, Hoffman said, are still singularly unaware of what is happening and of the seriousness of the danger that threatens them and the entire world. Europe knows, he declared, and that is one great reason why the Marshall plan is having results; it has given hope and strengthened the will of western Europe to oppose the spread of communism. Our aid did not succeed in China because communism is being fought only on a military front and not by giving democracy to the people.

Hoffman warned that economic aid alone is not enough, however, and said it must be accompanied by military preparedness and political stability. The value of military strength will be to show Russia it would be unwise to start her armies marching; but political stability is a keystone in rebuilding a prosperous world.

Steel Now or Later

ONE of the most controversial features of the whole legislative program laid before Congress by President Truman is his proposal for a study of steel supply and construction of government plants if necessary.

That proposal is expected to be fought bitterly if it is ever embodied in definite legislation, as a first step toward socialization of industry, with a good chance that it will be defeated.

Even the Council of Economic Advisers, which sent the idea to the President for inclusion in his State of the Union message, reportedly is split over both the desirability and advisability of having the Government assume an operational role in industry. Dr. Edwin G. Nourse, chairman of the council, recently admitted publicly that he is out of sympathy with it; members of Congress have called it frankly socialistic, and the steel industry is speeding up operations with a view to showing that government production is unnecessary.

In some quarters, administration supporters are attempting to tone down the storm by suggesting that the President does not intend to press the matter if the steel industry raises its output adequately and made the recommendation for the purpose of needling the industry to action.

The idea of government steel production, however, is not new. It has been knocking around Washington for months. its proponents undisturbed by the fact that it would take 2 years and 5 tons of steel from present supply for every ton of output to build the plants. These men have suggested government production of 10,000,000 tons a year; the construction of even a small plant would require a large volume of steel the loss of which to industry would only make the present supply situation worse. The fact that new construction would rob present supply, as well as the fear that once demand has been overtaken the mills would have to reduce their operations, may be behind the reluctance of the industry to expand its facilities.

More Bureau Shuffling

PRESIDENT TRUMAN has asked Congress for complete authority to reorganize any or all government agencies. His request undoubtedly will be granted, and something eventually may be done toward straightening out the present muddled situation where some 30 separate agencies all have interests in oil which frequently conflict.

Herbert Hoover's commission on reorganization will begin to file its reports with Congress next month and is expected to have considerable to say about the oil situation, either in its review of Interior Department activities or in a special report on overlapping and duplication of functions.

Given the authority he asks, the President could go far toward making Hoover's recommendations effective.

The legislation which Truman has asked is similar to that passed by Congress at President Roosevelt's request in 1935 and 1939, authorizing the President to draft reorganization plans to be submitted to Congress. Unless rejected by both House and Senate within 60 legislative days,

such plans would become effective, but the law would be inoperative unless Congress was in session for the entire 60 days, a provision which eliminated any chance of reorganizations being put through during a recess without giving Congress an opportunity to consider them.

Several reorganizations were ordered by Roosevelt under the previous legislation, but critics complained that they did no more than transfer whole organizations from one agency to another. President Truman, however, has specifically asked for power to shift functions as well as agencies, paving the way for consolidations and economies.

Drive for ITO

THE State Department is launching a drive for prompt ratification by the Senate of the International Trade Organization charter developed last year at a conference of 54 countries at Havana, Cuba.

That agreement, which it was foreseen might encounter difficulty in securing ratification by a Republican-controlled Senate, now is expected to receive sympathetic and quick consideration by a Democratic chamber. The administration is anxious that it be acted upon as soon as possible on the ground that a major purpose of the charter is to establish trading practices that will hasten world economic recovery and postponement of its adoption would delay that recovery.

Many provisions of the charter would have practical application at once, it is pointed out, such as those setting up procedures for making commodity agreements equitable to both producing and consuming countries, curbing cartel practices that restrict international trade, rules for governing trade relations between state-trading and private-enterprise countries, adequate security for foreign investments, and similar subjects.

The effect of other provisions, however, will not be felt until the world returns to a more orderly economic life, the most important in this category calling for an orderly application of quotas set up by countries faced with balance-of-payments difficulties so as to disturb trade as little as possible and the prompt termination of quotas when the underlying difficulties have been eliminated.

On the other hand, the department holds, if the charter is not adopted emergency trade practices of many countries are likely to form permanent patterns for more and more governmental control over foreign trade which will result in additional restrictions and discriminations. The danger of trade warfare would be a constant threat and in such circumstances, with trade conducted primarily on a bilateral basis, American business might find itself unable to compete in foreign trade without federal aid and accompanying governmental controls.

No Compromise

ANTICIPATING that the tidelands controversy will end in a deadlock because of inability of either side to out-vote the other, suggestions are being made at the Capitol that the industry try to work out a "compromise."

A recent survey of the situation indicates that supporters of the legislation to return the tidelands to the states quite possibly could round up enough votes to pass the legislation, but might not be able to get the two-thirds vote necessary to override a presidential voto.

On the other hand, they may well be in a position to block action on any bill for federal administration of the California tidelands and those of Texas and Louisiana, if the Supreme Court extends its "paramount rights" philosophy to those states.

Even Emanuel Celler of New York, chairman of the House judiciary committee who is heading the administration's fight, acknowledges it may be possible that neither side can secure its legislation, but nevertheless is opposed to any compromise. Celler has indicated he will try to sit on all legislation until an opportunity arises to get the government bill over, but is likely to find his seat more than warm when the quitclaim supporters, many of them from Democratic states, start needling him.

The idea of a compromise also was held out by Interior Secretary J. A. Krug in addressing the National Petroleum Council this month. Krug intimated that if the fight for state ownership is dropped, the oil industry might find it possible to secure better leasing and other terms than if it continues to butt its head against a stone wall.

Krug's suggestion met with less than enthusiastic response from the NPC members, who are not convinced that states' rights cannot win. And anyway, it was pointed out, the Secretary apparently considered the oil men were leading the fight and could call off the state attorneys general at will.

California Tidelands Case Delayed as Master Quits

WASHINGTON. — Former Justice D. Lawrence Groner, appointed by the Supreme Court last July 2 as special master in the California tidelands case, has asked the court to be relieved of his duties because of poor health. Groner, who is 74 years of age, was to have opened hearings in California January 19 but the hearings have now been postponed indefinitely.

Groner disclosed that he had sent in his resignation some days ago but it apparently reached the court during its monthly recess for the writing of opinions and no announcement has been made in Washington. It is expected the court may announce the resignation when it meets again next Monday.

The change in special masters might mean a lengthy delay in the delineation of the areas in dispute between the state and federal governments, since Groner's successor might require some time to study the record. He also would be entitled to make his own decision as to whether there should be hearings of the nature which Groner planned to hold in California.

I.O.C.C. Plans Meeting In Jacksonville, Fla.

Spring quarterly meeting of the Interstate Oil Compact Commission will be held in the Roosevelt Hotel, Jacksonville, Fla., May 10-12. Standing committees of the commission will meet on Tuesday, May 10. General sessions will be held on May 11 and 12.

The program for the meeting, to be of particular interest to people of the southeastern states, will be determined by the executive committee at its meeting in Topeka, Kans., January 31.

Creslenn Buys Interest In Duval County Fields

HOUSTON.—Creslenn Oil Co. of Corsicana, has paid $1,000,000 for the interests of J. W. Gorman and Si Yoaku, San Antonio independent oil men, in 136 producing wells in the Hoffman and Tarancahuas fields, Duval County.

Cox & Hamon of Dallas are the operators of the wells and will retain their interest. Production involved is about 2,000 bbl.

Index Ready Soon

The complete editorial index of The Oil and Gas Journal for 1948 is now in preparation and will soon be ready. The complete index, enlarged and improved and with more cross-references, bound separately, will be sent without charge to all subscribers requesting a copy. Address requests to Circulation Department, P.O. Box 1260, Tulsa.

O'Mahoney Leads Off Oil Probes With an Omnibus Investigation

WASHINGTON.—First congressional group to make an investigation of the oil situation this year will be the Senate interior and insular affairs committee, this session under the leadership of Sen. Joseph C. O'Mahoney of Wyoming, which will open hearings next week on all phases of our natural resources.

O'Mahoney, a strong supporter of the administration's oil program to which he has made contributions in the form of leasing, synthetic-fuel, and other legislation, will have Interior Secretary J. A. Krug and members of his staff as lead-off witnesses to describe the "functions, problems, and hopes" of the department in the development and conservation of natural resources.

The major objectives of the investigation will be to secure efficiency and economy in the administration of resources, their development in the interest of a strong and stable domestic economy, and the encouragement of the discovery of new deposits and of further research into new sources and methods of development.

Plan Has Truman's Support

O'Mahoney is understood to have outlined his plans to President Truman before calling the hearings, and to have received his support.

The interior and insular affairs committee was created under the Congressional Reorganization Act of the Seventy-ninth Congress out of what formerly were the committees on public lands, irrigation and reclamation, mines and mining, Indian affairs, and territories and insular affairs. It is, accordingly, practically a committee on the Interior Department, covering practically all of its activities.

The broad scope of the committee's responsibilities will give it an important role in the handling of legislation dealing with such matters as federal administration of the tidelands oil deposits, development of synthetic liquid fuels, leasing of the public lands, the administration of any oil or other deposits that may be found in the Continental Shelf, secondary recovery, and other research of the Bureau of Mines. Outside the field of oil, the committee will deal with Indian questions, mining in all its phases, reclamation, and a host of other problems which from time to time have been dropped in the lap of the Interior Department.

Because of the keen interest which O'Mahoney has displayed in oil ever since he was first appointed to the Senate in 1933 to fill a vacancy created by the death of Sen. John B. Kendrick, it is expected the inquiry into oil problems will be exhaustive. O'Mahoney knows a lot about oil, having been chairman of the Temporary National Economic Committee and long a member of the public lands committee. Prior to the taking over of Congress by the Republicans in 1947 he was chairman of the committee on Indian affairs.

Commission Clarifies Texas Gas-Flare Orders

HOUSTON.—In clarifying a point in connection with the gas-flaring cases now in the courts, the Railroad Commission this week announced that gas lift is a legal use for casinghead gas.

The shutdown orders permit oil wells to operate if gas is used for light and fuel, efficient chemical manufacturing other than carbon black, for pressure maintenance, or for returning to the reservoir after liquid hydrocarbons have been extracted. The commission said some people have misconstrued the orders, and added that gas lift is an intermediate use of gas not prohibited by the orders.

Bills to Split Oil Industry, Continue Allocation Programs Are Introduced

WASHINGTON. — Legislation providing for the almost complete divorcement of the several branches of the petroleum industry was introduced in Congress last week by Sen. Guy M. Gillette of Iowa, returning to Washington after a 4-year absence.

The Senator dealt with the subject piecemeal, introducing three bills, one of which would permit producers to retain their refining facilities and transportation but prohibit them from engaging in the marketing of products. A second bill would prohibit interstate common-carrier pipe lines from transporting commodities in which such carriers have any interest, and a third would prohibit producers, refiners, and marketers from operating tankers and barges.

Measures also were introduced on both sides of the Capitol to extend Public Law 395 and the Export Control Act, the former for 7 and the latter for 28 months. The bills were introduced in the Senate by Sen. Burnet R. Maybank of Kentucky and in the House by Rep. Brent Spence of the same state, who are the new chairmen of the respective banking and currency committees.

Both Maybank and Spence said immediate consideration would be given the extension of the laws, now scheduled to expire February 28, which was recommended by President Truman in his early-session messages to Congress.

Under the terms of the legislation, Public Law 395, which provides for the voluntary allocation agreements entered into by the oil and steel industries, would be continued until September 30, 1949, that date being fixed so as to carry it through the full third quarter so that the steel industry could more readily schedule its production. The Export Control Act would be continued until June 30, 1951, unless suspended earlier by the President or Congress, and would be amended so as to require the Department of Commerce to consult with representatives of the export trade concerning licensing criteria and related matters.

Such consultation now is purely discretionary on the part of the department, and Maybank explained that the new provisions would require the continuation of current operating policies and at the same time permit the administration flexibility which the experience of several years has demonstrated to be essential.

Mississippi Ruling Contested by Gulf

HOUSTON.—A suit has been filed by Gulf Refining Co. to test an order of Mississippi's new oil and gas board.

Gulf is contesting a board ruling that the company overproduced from a well in Gwinville field, Jeff Davis County. The board has ruled that the overproduction must be made up to the other producers in the field within 18 months.

The old ex-officio state board set the allowable figure for the field. The new board has set only gas allowables, but has ruled that oil allowables set by the ex-officio board will be followed.

Midway-Lane Hearing Set

HOUSTON. — The Texas Railroad Commission will hold a hearing February 1 on the application of Sinclair-Prairie Oil Co. to operate a pressure-maintenance plant in Midway Lane field, Crockett County.

Producers Aroused Over Imports; May Ask Congress for Limitation

INDEPENDENT oil producers in the Mid-Continent area are becoming increasingly alarmed over the importation of foreign petroleum, and may be expected to appeal to Congress for legislation increasing the import duty or imposing quotas on the volume which may be brought in.

The producers blame imports for the reduction of crude output in Texas and elsewhere, for the threat of excessive accumulation of stocks of crude, and for the softening prices for some petroleum products and the failure of the attempt to increase the price of crude last fall.

This subject was the chief concern of the executive committee of the Texas Independent Producers and Royalty Owners Association meeting in Houston last week, and it is expected to be one of the principal topics before the executive committee of the Independent Petroleum Association of America meeting in Wichita Falls, Tex., this week.

"The so-called balance that now exists between oil production and demand is the result of half a million barrels per day being imported," Guy Warren of Corpus Christi, president of the Texas Association, declared following the meeting. "The question of whether foreign or domestic production will be encouraged has arrived."

Committee Seeks Action

The group, which met one day after the Railroad Commission ordered a 66,188-bbl. cutback in Texas allowables, appointed a committee to recommend possible solutions to the problem of imports. One unofficial report intimated that the association would ask (1) that imports be restricted to a fixed quota, and (2) that the present tariff rate of 10½ cents a barrel be increased.

Warren further said that "if domestic producers are forced to adjust production to provide only what foreign producers can't supply we will shortly see a drastic slackening in the pace with which independent producers are rebuilding surplus production capacity. With imports now exceeding 600,000 bbl. per day and oil stocks increasing, the Railroad Commission was compelled to cut back Texas allowables. Cuts made are already costing the state more than $12,000,000 annually in taxes. Drilling operations have been drastically reduced in recent weeks, largely resulting from the fear that foreign oil will displace rather than supplement domestic production in supplying this nation's demands."

In suggesting that the Wichita Falls meeting take up the problem of imports, Russell B. Brown, general counsel of the I.P.A.A., declared that while the National Petroleum Council has adopted a satisfactory policy on imports, some interests are attempting to hold down domestic production and increase imports. He declared:

"It seems that those who were perfectly willing to destroy the domestic industry and who have implemented their previous attacks on this industry by false propaganda are willing to employ the force of imported oil to deny a proper price base and to interfere with the free economy in the price structure by establishing a control price in the industry through the combination of a few companies engaged in the importation of oil.

"It now becomes quite obvious that it was the improper use of imported oil that prevented the recent attempt to increase the price of crude petroleum as initiated by Phillips Petroleum Co., Sinclair Oil Corp., and others. Even while the National Petroleum Council was approving the wording of a national oil policy, according to reliable information which came to me, a portion of this combine of importing companies was attempting to sell on the Gulf Coast imported oil at 30 cents per barrel under the posted price.

"So in the face of the wording of the national oil policy that 'imports in excess of our economic needs. . . . will retard domestic exploration and development of new oil fields and the technological progress in all branches of the oil industry which is essential to the national economic welfare and security,' we find representatives of this combine of importers not only willing but attempting to undermine the welfare of the United States and to destroy domestic producers of oil."

This statement followed only a few days one by Harold B. Fell, executive vice president of the I.P.A.A., who said:

"Preliminary figures indicate that there was an increase in aboveground stocks of crude oil and refined products, during 1948, of between 95 and 100 million barrels, which is an average increase of over 260,000 bbl. per day.

"Imports for the year 1948 averaged approximately 500,000 bbl. per day, which is an increase of nearly 15 per cent over 1947. The Bureau of Mines estimates that in 1949 imports will average 556,000 bbl. per day during the first quarter and 539,000 bbl. per day during the second quarter. An analysis of all information available indicates to me, unless there is a change of policy by the importing companies, that imports will increase to between 570,000 and 600,000 bbl. per day for the first and second quarters of 1949.

"The Bureau of Mines shows a demand for domestic crude oil of 5,450,000 bbl. per day for the first quarter of 1949. With an average daily production of approximately 5,682,000 bbl. per day for December, this means that domestic crude oil production would have to be reduced around 235,000 bbl. per day below the December 1948 rate during first quarter of 1949 unless imports are reduced, in order to prevent aboveground waste.

"It appears it will be necessary to reduce domestic production considerably more than 235,000 bbl. per day, if the reduction in aboveground stocks at an average rate of 332,000 bbl. per day is to be accomplished, which accomplishment is essential to prevent aboveground waste."

Next Week

Skelly Oil's New Velma Plant.—The Journal sends an editor-photographer team to report constructional and operational features of this new natural-gasoline plant. Included are three flow diagrams for the gasoline-L.P.G., gas-treating, and gas-dehydration sections.

Wells Slanted at 57°.—High-angle directional holes will expand tidelands drilling range; 57° attained by Magnolia's well No. 1 Block 77.

The New "Ozark" Big-Inch Pipe Line.—This is a 22-in. 435-mile crude-oil pipe line between Cushing, Okla., and Wood River, Ill.—a joint project between Shell Pipe Line Corp. and Texas Pipe Line Co. Features of electrical equipment and design of the pumping stations are discussed.

Sunray Oil Converts 100-Octane Plant.—This article describes the revamping of the original two-stage cat cracker, installation of poly unit, propane unit, treating equipment, etc., to integrated 20,000-bbl. unit.

Pneumatic Controls on Pulling Unit.—New equipment speeds well-servicing operations; as much as 35 per cent time savings is effected.

Largest Offshore Drilling Structures.—Design details given for two offshore drilling units of Superior Oil Co. These big units each will have deck area of 1 acre and will permit drilling to 20,000 ft.

PERSONALS

Lynd Made Vice President Of Cities Service Oil Co.

LLOYD LYND, treasurer and director of Cities Service Oil Co., Empire Pipe Line Co., Cities Production Corp., and Terminal Facilities, Inc., and a director and assistant treasurer of Cities Service Oil Co., Ltd., has been elected a vice president of Cities Service Oil Co.

Lynd was employed by Cities Service as a junior engineer in 1919. He completed the junior engineering course and was assigned to various departments of the treasurer's division until 1928 when he was elected assistant treasurer of Cities Service Oil Co. He was promoted to treasurer in 1941.

He graduated from the college of Emporia and attended the University of Beaune at Beaune, France, after which he served in the army of occupation following Warld War I.

Floyd F. Campbell, for the past several years, manager of Phillips Petroleum Co.'s retail activities and a pioneer in L.P.G. activities, has resigned to enter private consulting practice. He is national chairman of the appliance committee of the Liquefied Petroleum Gas Association.

Ben F. Zwick, executive assistant with Standard Oil Co. (N.J.) at New York and head of the producing coordination department for the Middle East, has resigned to become vice president for Husky Refining Co. of Wyoming. He will direct the Alberta-Saskatchewan operations of Husky's Canadian subsidiary, Husky Oil & Refining, Ltd. **M. R. McArthur,** vice president for Husky and who directed Canadian operations, will head the producing operations in the United States.

John E. Mabee, independent Oklahoma oil producer, has been elected a director of the First National Bank & Trust Co. of Tulsa.

Frank Williamson has been named manager of the Midland, Tex., office opened by Stephens Petroleum and Associates.

General Petroleum Corp. of California has announced the advancement of **C. G. Cortelyou** to project engineer, **C. M. Reading** to manager, **J. J. Tobin** to chief estimator, **A. B. Westlake** to job engineer, all of the engineering division; **H. R. Alfson** to gas engineer, **C. W. Walker** to maintenance foreman of the gas department, both of the manufacturing division; **A. F. Barett** to manager Rocky Mountain operations, **C. C. Gandaubert** to superintendent, southern division, and **O. M. Jensen** to foreman, all of the production division.

J. H. McMasters has been appointed chief geologist for Honolulu Oil Corp. succeeding **Elmo W. Adams** who resigned to enter private practice. McMasters has been with Honolulu since 1930 and for several years past, has been division geologist at Bakersfield, Calif.

J. F. Drake, chairman of the board, Gulf Oil Corp., has been made Chevalier in the French Legion of Honor, in recognition of services rendered in France over a period of many years. The award was presented by Henri Bonnet, French ambassador.

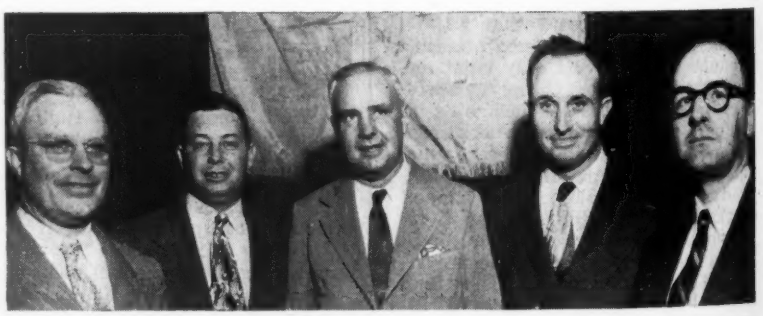
H. J. "Harley" Holcomb, process engineering department, Socony-Vacuum Oil Co., Inc., Augusta, Kans., refinery, has been transferred to the company's pipe-line department in New York where he will be in charge of scheduling product movement through the lines.

J. W. Towart has been transferred to Egypt as production manager, Socony-Vacuum Oil Co., Inc., from operations manager in Venezuela.

R. L. Wagner, for the past 2 years, assistant manager of the legal department of Shell Oil Co., Inc., has been appointed general counsel of the Great Lakes Pipe Line Co. Wagner will move from New York to Kansas City, Mo., to assume his new duties on February 1.

J. H. Olehy, formerly director of technical services in the manufacturing department, Continental Oil Co., has been appointed manager of the general engineering department. **T. O. Duller,** formerly assistant chief engineer, has been appointed chief design engineer in the expanding general engineering department.

H. R. Prescott, formerly chief geophysicist, Continental Oil Co., has been promoted to assistant manager, export department. **B. G. Swan,** formerly superintendent, seismic division, replaces Prescott as chief geophysicist. **L. E. Whitehead,** formerly area supervisor for seismic work in Oklahoma and Kansas, has been made superintendent, seismic division.



Guests at the January meeting of Houston Nomads to hear Comdr. W. T. Greenhalgh's lecture on "Economic Mobilization" were: Paul Lehr, Shell Oil Co., Inc., Los Angeles; R. B. Starke, Caribbean Petroleum Co., Maracaibo, Venezuela; O. Kirkpatrick, Caribbean Petroleum, Maracaibo; R. S. Stephens, Mene Grande Oil Co., C. A., Maracaibo; and C. K. Mouteney, Trinidad Petroleum Development Co., Ltd., Bombay, India

E. D. Gray, assistant to the general manager of the Richmond refinery, Standard Oil Co. of California, has retired after having completed 50 years service with the company.

John Wagner, Mid-Continent Oil and Gas Association, Dallas, and **Walter Beach,** Humble Oil & Refining Co., Houston, are among the 24 guest speakers who will address University of Texas journalism classes during the spring semester.

C. P. McGaha, Wichita Falls oil operator, and president of the City National Bank there, has been named to the board of directors, Southwestern Fire & Casualty Co., Dallas.

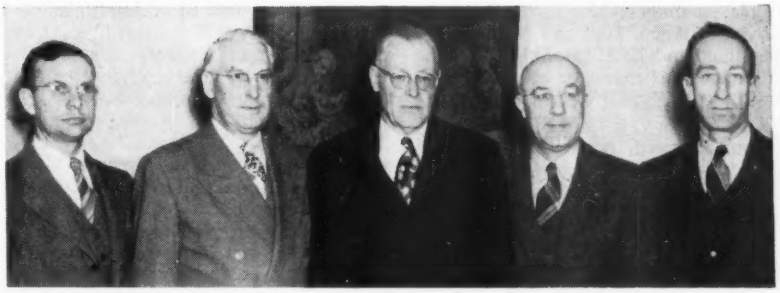
The Fort Worth Geological Society at this week's meeting installed the following new officers: **Frank H. Schouten,** Stanolind Oil & Gas Co., president, succeeding **Richard H. Schweers,** The Texas Co.; **H. C. Vanderpool,** Texas Pacific Coal & Oil Co., vice president, succeeding Schouten; and **Thomas Nichols,** Rowan Drilling Co., secretary-treasurer, succeeding **Millicent Renfro,** Texas Pacific.

Harry C. Flinn, Canadian Bitumuls Co., Ltd., was elected president of the company in December 1948. He joined Canadian Bitumuls in 1930, having served with Standard Oil Co. of California for many years. After graduating in civil engineering from Stamford University, Flinn followed the engineering and contracting business for 10 years. At the time of his resignation from California Standard he was a district manager in the marketing department.

Corbin J. Robertson, vice president, Quintana Petroleum Co., has been named a director of the City National Bank, Houston.

Charles F. Henderson has resigned from the Midland district office of Stanolind Oil & Gas Co. to become a consulting geologist.

G. T. Buskirk, formerly division geologist at Bogota, Colombia for Stanolind Oil & Gas Co., has been named division exploration superintendent in the Colombian division and **C. F. Schock,** formerly division landman at Calgary, Alta., has been made exploration superintendent in the Canadian division. **Ian M. Cook,** previously assigned to the Canadian division as geologist, has been named senior geologist in the division.



New officers of the Middle District Oil Producers Association, an organization of Pennsylvania operators, elected at their January meeting, are: Miles Blanchard, assistant manager, Northern Ordnance, Inc., treasurer; Frank E. Lyons, Pennsylvania Oil & Gas Management Associates, secretary; Stanley Bayless, independent oil producer, president; Roy Bailey, petroleum engineer, Wolf's Head Oil Refining Co., vice president; and Chauncey Gray, manager, Patoil Corp., chairman of the board

John C. Agnew, formerly assistant secretary and assistant treasurer of Sun Oil Co., has been elected secretary and treasurer and a director of the company. He succeeds **Francis S. McIlhenny, Jr.,** who resigned in December. Agnew joined Sun as an auditor in 1920 and in 1924 became accountant for Beacon Sun Co., a partly-owned subsidiary, then engaged in exploration and production in Venezuela. He helped develop the stock purchase plan for Sun employes and was in charge of accounting for the plan for many years. He became manager of Sun's payroll department in 1936, continuing in that capacity until his appointment as assistant secretary and assistant treasurer in 1947.

J. C. AGNEW

J. B. Wheeler, Houston independent operator, has been named vice president and general manager of the Copetco Corp., a newly organized wildcatting firm. Copetco offices will be in the Second National Bank Building in Houston.

Joe B. Cross, chemical engineer with Sinclair Refining Co., will transfer from Coffeyville, Kans., to Houston on February 1, to become assistant power plant superintendent.

Peter T. Lamont, assistant coordinator of marketing for foreign affiliates of Standard Oil Co. (N. J.), has been appointed coordinator of marketing, succeeding **Emil E. Soubry** who recently was elected a member of the board of directors.

B. Van Hasselt has been appointed director-general of Royal Dutch Petroleum Co. succeeding **J. B. A. Kessler** who resigned effective January 1.

Van Hasselt is now managing director of the Royal Dutch company for which he has worked in the East Indies, and in Mexico.

Kessler is to be proposed as chairman of the board of the company at its next meeting. The present chairman, **W. H. Van Leeuwen,** told the stockholders that he would shortly relinquish his office. The company was formed by Kessler's father.

Carl G. Nelson, Sun Oil Co., Philadelphia general office, has been appointed office manager of Sun's district office at Pelham Manor, N. Y.

E. Cary Link has been appointed traffic manager of Fish Constructors, Inc., Houston, which is undertaking the management of construction of the Transcontinental Gas Pipe Line Corp. project. Link has handled traffic for Texas-New York projects of War Emergency Pipelines, Inc., and Tennessee Gas Transmission Co.

Gilmore T. Gwin has been elected president of the Society of Professional Chemists and Engineers, an organization of nonsupervisory chemists, engineers, and physicists, serving in the Baytown refinery of Humble Oil & Refining Co. Other officers elected were: **Thomas J. Greaney,** vice president; **Thomas M. Babin,** secretary; and **Warren H. Schweitzer,** treasurer.

A. L. Lenwell, Sinclair Refining Co., has been named manager of the North Texas area with headquarters at Fort Worth. **A. F. Buck,** manager of the southwestern district offices in Fort Worth, has retired after 30 years of service. **R. T. Shook** will be transferred to Tyler, Tex., as northeast

PERSONALS

Texas manager; **J. F. Lilley** has moved to Waco, Tex., as central Texas manager, and **E. J. Haubold** has gone to Houston as manager of portions of Southwest Texas.

Tom Howard, American Republics Corp. geologist, has been transferred from Midland to San Angelo, Tex.

Lewis Hood, head valuation engineer for the Bureau of Valuation of the Interstate Commerce Commission, who was in charge of the valuation of common carrier pipe lines made by the commission in 1934-35, is retiring from the government after 35 years of service.

E. C. Peet, formerly vice president and treasurer for Shell Oil Co., Inc.'s operations east of the Rocky Mountains, has been made financial vice president in charge of the company's financial organization throughout the United States and has been elected a director. **J. H. White,** vice president in San Francisco, has moved to New York as vice president and controller, and **A. G. Schei,** treasurer of Shell Chemical Corp., becomes treasurer of Shell Oil Co., Inc. **A. A. Buzzi,** formerly assistant treasurer, has been named assistant controller, and **J. M. Flaherty,** formerly manager of the accounting department, becomes assistant treasurer.

Owen Thornton, The Texas Co., is the newly elected chairman of the Gulf Coast section of the American Institute of Mining and Metallurgical Engineers in Houston. He succeeds **George L. Nye,** vice president of the City National Bank. Other new officers are: **E. B. Miller,** Tide Water Associated Oil Co., **Dr. George Fancher,** University of Texas and **A. B. Stevens,** Texas A. & M. College, vice chairmen; and **Everett Stratton,** Schlumberger Well Surveying Corp., secretary-treasurer. New directors of the chapter are: **Fred Nelson,** Texas Gulf Sulphur Co.; **G. D. Robertson,** Shell Oil Co., Inc., and **L. B. Uhrig,** Humble Oil & Refining Co.

Fred W. Townsend, superintendent of gasoline plants for Lone Star Gas Co. and Lone Star Producing Co., Dallas, announced the following changes in plant personnel: **Cecil W. Louks,** formerly superintendent of the Carthage cycling plant, has been made dehydration plant supervisor, with headquarters at Ranger, Tex. **J. M. Phillips,** formerly superintendent of the Gordon plant, succeeds Louks at Carthage, Tex. **R. G. Porter,** previously superintendent of the Ranger central fractionating plant, succeeds Phillips as superintendent at Gordon, Tex. **Ted Sparling,** formerly superintendent at Trinidad, Tex., succeeds Porter at Ranger, Tex. **R. V. Burns,** formerly superintendent of the Opelika cycling plant, succeeds Sparling at Trinidad. **F. D. Ford,** previously superintendent of the Chapel Hill cycling plant, succeeds Burns at Opelika; Ford's mailing address is Murchison, Tex. **A. H. Rawlins,** formerly superintendent at Grapeland, Tex., succeeds Ford at Chapel Hill, and has his headquarters at Tyler, Tex. **L. E. Todd,** formerly assistant superintendent at Opelika, succeeds Rawlins at Grapeland. **A. B. Gilbert,** formerly assistant superintendent at the Hollis, Okla., gasoline plant, succeeds Todd at the Opelika plant. **J. O. Simpson,** Hollis, has been promoted to assistant superintendent at that location, succeeding Gilbert.

M. J. Morash, Transit & Storage Co., Port Huron, Mich.; **A. E. Wolf,** Standard Oil Co. (Ohio), Cleveland; and **D. J. Shreiber,** Petco Corp., Milwaukee, have been appointed to the financial and accounting committee of the American Petroleum Institute. The division of production has announced the following changes in the Mid-Continent committee: **J. A. Bermingham, Jr.,** division engineer, The Texas Co., Tulsa, succeeds **H. R. Bolton** as chairman of the registration committee; **Whitney M. Elias,** chief engineer, producing department, Stanolind Oil & Gas Co., Tulsa, succeeds **C. F. Bedford** as chairman of the entertainment committee. Both Bolton and Bedford resigned due to transfers from the district.

SHIFTS—

Robert Arnold, foreman, Gulf Oil Corp., Miamitown to Cincinnati, Ohio; **J. M. Lilligren,** geologist, Sinclair Prairie Oil Co., Pittsburgh to Billings, Mont.; **Calvin C. McKee,** engineer, Warren Petroleum Co., Tulsa to Longview, Tex.; **M. R. Burditt,** geologist, Amerada Petroleum Corp., Tulsa to Midland, Tex.; **H. S. Brigham,** superintendent, Western Gulf Oil Co., Saugus to Bakersfield, Calif.; **Morris L. Etheredge,** engineer, Stanolind Oil & Gas Co., Dallas to Port Arthur, Tex.

M. D. Mauck, geologist, Pure Oil Co., Midland to Fort Worth 1, Tex.; **O. K. Harris,** foreman, Gulf Oil Corp., Port Arthur to Orange, Tex.; **C. C. Alexander,** engineer, The California Co., Barataria to Harvey, La.; **Katherine W. Carman,** geologist, Buckhorn Oil Co., Newburgh, Ind., to Palm Springs, Calif.; **G. A. Schofield,** foreman, The Texas Co., Lewistown to Roundup, Mont.

F. L. Hoipkemfier, engineer, Halliburton Oil Well Cementing Co., Ada to Pauls Valley, Okla.; **Clayton S. Valder, Jr.,** geologist, Stanolind Oil & Gas Co., Anadarko to Hobart, Okla.; **W. G. Plemons,** superintendent, Parker Drilling Co., Cyril, Okla., to Oklahoma City; **James T. Grady, Jr.,** superintendent, The Texas Co., Tulsa to Wichita, Kans.; **Everett S. Sherwood,** foreman, Pure Oil Co., Temple, Mich., to Casper, Wyo.; **I. B. Millar,** foreman, Santa Fe Drilling Co., Brea to Ventura, Calif.; **Jess G. Blevins, Jr.,** engineer, The Texas Co., Monument, N. M., to Sundown, Tex.

DEATHS

Jasper Redmond, 73, chairman of Redmond & Bramley Oil Co., Albany, N. Y., died January 15 at Albany.

Dr. C. A. Marlies, 43, consulting petroleum engineer and associate professor of chemical engineering at City College of New York, died January 14 at New York.

Richard Hartshorn, oil editor of the New Orleans Times-Picayune, died January 15 in that city.

Thomas A. Ogg, Jr., 41, consulting geologist, died in Houston January 16.

Elwin B. Hall, geologist and petroleum engineer who operated the oil properties of Union Pacific Railroad Co., died January 20 at Los Angeles.

Elijah Robinson Suydam, 63, manager of the commercial gasoline department of Sun Oil Co., Hackensack branch, died January 14 at Westfield, N. J.

Emanuel A. Timm, 62, safety supervisor with Esso Standard Oil Co., died January 16 at Roselle Park, N. J.

Herman Tweedy, 61, assistant tax agent, The Texas Co., Houston, died January 12 at Houston.

Stephen Reid Capps, 67, geologist for U. S. Geological Survey, especially noted for exploratory work in Alaska in previously uncharted regions, died January 19 at Washington, D. C.

Milford Edwin Tracy, 53, manager of refinery planning and operations for Richfield Oil Corp., died January 15 at Los Angeles.

James G. Butler, 68, New York Lubricating Oil Co., died January 18 at Elizabeth, N. J.

Russell V. Bower, 50, general auditor of Quaker State Oil Refining Co., died January 17 at Oil City, Pa.

REVIEW

FORECAST

PRODUCTION—U. S. crude output in 1948 totaled 2,051,433,000 bbl.; averaged 5,605,000 bbl. daily, an increase of 10.2 per cent over 1947. 1949 forecast at 2 or 3 per cent higher. Foreign production averaged 3,775,000 bbl. daily, up 18.1 per cent.

DRILLING—An all-time record of 39,778 wells completed in 1948, exceeding 1947 by 6,656, or 20.1 per cent. Forecast for 1949 is 37,550 wells, 5.6 per cent, under 1948. Footage drilled was 137,392,000 ft., 20.5 per cent over 1947. Forecast is for 137,500,000 ft. in 1949, indicating fewer but deeper holes.

RESERVES—U. S. reserves of all liquid petroleum hydrocarbons (crude, condensate, and casing head) stood at 27,325,000,000 bbl. January 1, 1949, an increase of 1,341,000,000 bbl. during 1948. Ratio of reserves to production dropped slightly, standing at 12.1 for 1949 compared with 12.5 in 1948 and 12.2 in 1947. Wildcats drilled in 1948 were 6,887, up 25.9 per cent over 1947. In 1949 the industry will drill 7,053 wildcats, an increase of 2.6 per cent, and 30,497 development wells, a decrease of 7.3 per cent.

IMPORTS-EXPORTS—U. S. was a net importer by 123,000 bbl. per day in 1948. Imports in 1949 may average 543,000 bbl. daily, up 8.3 per cent over 1948; exports forecast at 387,000 bbl. daily, up 2.4 per cent.

REFINING—Crude-oil run to stills averaged 5,535,140 bbl. daily in 1948, 9.1 per cent over 1947. During 1949 runs will average 5,809,000 bbl. daily, an increase of 5.0 per cent. Construction projects under way and scheduled for 1949 will keep capacity ahead of requirements.

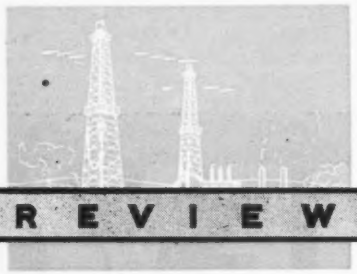
NATURAL GAS—Sales in 1948 were up 11.4 per cent over 1947. Transmission lines now total 251,330 miles. Natural-gas industry spent $675,000,000 for construction in 1948; plans to spend $625,000,000 in 1949. Gas reserves as of January 1, 1949, were 175 trillion cubic feet, increase of 0.9 trillion cubic feet over last year.

LIGHT HYDROCARBONS—Total production in 1948 up 9.8 per cent over 1947; forecast for 1949 is 6 per cent increase. Output of L.P.G. was up 14.7 per cent over 1947; increase of 10.5 per cent forecast for 1949.

PIPE LINES—9,363 miles of pipe line were completed in 1948 in the U. S.—3,024 miles for crude, 1,953 miles for products, 4,386 miles for natural gas. Projects now under way or scheduled total nearly 40,000 miles.

An Annual Feature of **THE OIL AND GAS JOURNAL**

DRILLING FORECAST



37,550 Wells, 137½ Million Feet, Predicted for 1949 Drilling

REVIEW AND FORECAST

by Charles J. Deegan

THE 1949 drilling program of the industry calls for 37,550 wells, and 137½ million feet; a decrease from 1948 of 5.6 per cent, or 2,228 wells. But there are enough deeper wells scheduled for 1949 to keep the total footage almost unchanged from 1948. The figures actually show about 0.1 per cent increase, or 140,000 ft.

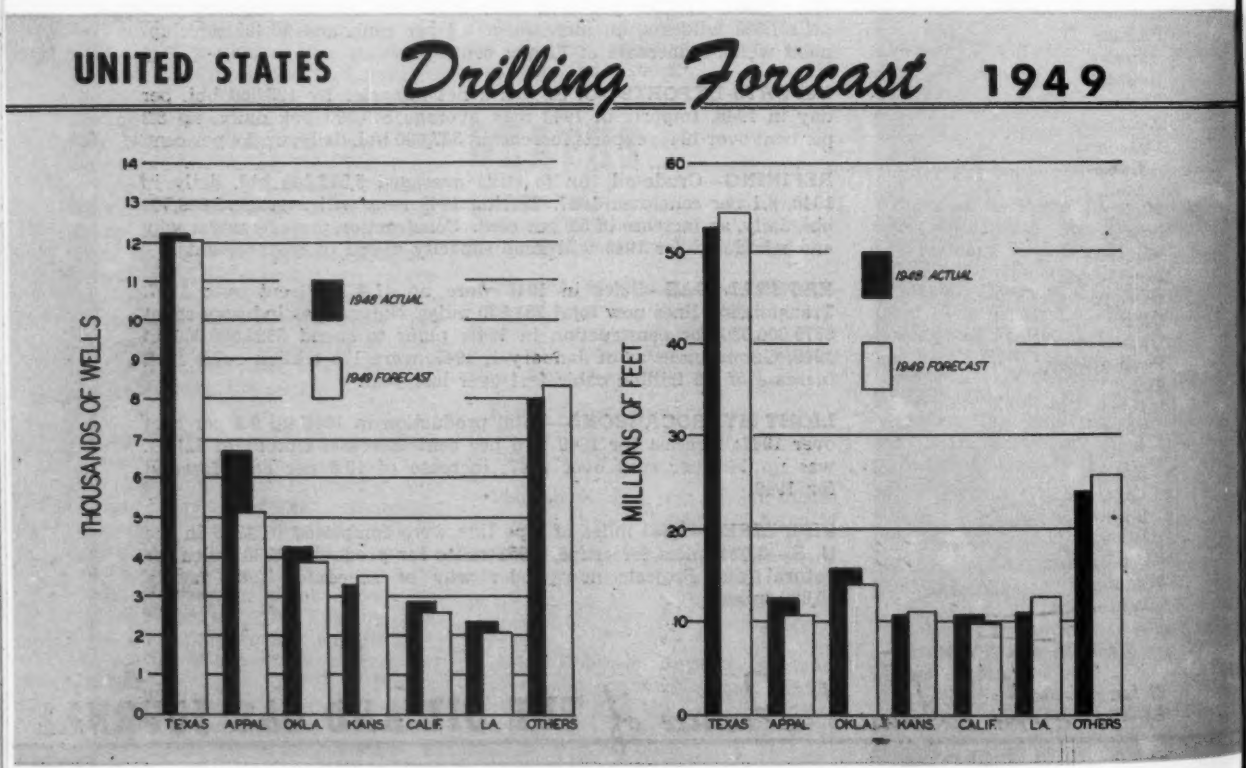
That is the way the programs of the individual companies come out when they are all added together to get the composite program of all operators as of January 1, 1949.

There will be no slackening in the exploration program. The operators have scheduled a 2.6 per cent increase in wildcat drilling. The 1949 program calls for 7,053 wildcat wells as compared to 6,877 in 1948.

All the decrease is in the class of field-development wells. The program calls for a decrease of 7.3 per cent from last year's record breaker; 30,497 wells this year compared to 32,901 last year.

When the program of all of the large operators is compared with the program of all of the small operators, there is no significant difference noticeable. The table at the top on the opposite page shows several things. Both large and small operators, as total groups, intend to increase wildcat drilling; both intend to cut back slightly on field wells. The small operator group seems to be headed for a somewhat greater cutback in field wells than the large operator group. This might be misleading. Large operators usually stick close to their budgeted program; small operators are more apt to increase their development drilling as a result of successful wildcats or extension wells completed after the first of the year. In such cases, large operators switch locations already budgeted; small operators are more likely to add more wells to their previous program.

These composite programs, in the case of both large and small operators, are made up of conflicting trends among individual operators. A few small operators are very optimistic with big expansion plans; a few are very pessimistic, cutting down heavily. The same thing is true of large operators, a small minority either extremely optimistic or extremely pessimistic. But among both small and large-operator groups, the largest number have a 1949 program that is only slightly up or slightly down from 1948, or exactly the same. On net balance both groups are slightly down in number of field wells, slightly up in wildcats. Only in the foot-



DRILLING FORECAST FOR 1949 BY TYPE OF OPERATOR

	27 large operators		All other operators		Whole industry	
	1949 Program	1948 Actual	1949 Program	1948 Actual	1949 Program	1948 Actual
Wildcat wells	1,381	1,312	5,672	5,565	7,053	6,877
Field wells	9,108	9,469	21,389	23,432	30,497	32,901
Total wells	10,489	10,781	27,061	28,997	37,550	39,778
Total footage	*50.7	*49.1	*86.8	*88.3	*137.5	*137.4
Change in wildcats	+ 69		+ 107		+ 176	
Change in field wells	—361		—2,043		—2,404	
Change in total wells	—292		—1,936		—2,228	
Total wildcats	19.7%	19.1%	80.3%	80.9%	100%	100%
Total field wells	29.8%	28.8%	70.2%	71.2%	100%	100%
All wells	27.9%	27.2%	72.1%	72.8%	100%	100%
Total footage	37.9%	35.6%	62.1%	64.4%	100%	100%

*Footage in millions of feet.

age column is there any difference. The large operators do drill the deep wells, and apparently they see enough steel this year to drill some of the deeper wells they didn't get to drill in 1948. So, the footage of the large operators is up, that of the smaller ones down.

Individual differences of opinion as described above also apply to large operators noted for being fiercely competitive with each other, and to independents noted for aggressive competition with majors and with other independents. The table at the bottom of the opposite page shows that this is also true of geographic areas. There are plenty of exceptions to the over-all minus sign for the United States. The change columns show many a plus sign, as well as the numerous minus signs.

Drilling Program Forecast for 1949 by Areas

	1949 program forecast				Change from 1948 actual			
	Field wells	Wildcat wells	Total wells	Total footage	Field wells	Wildcat wells	Total wells	Total footage
Alabama	2	25	27	155,000	0	+ 6	+ 6	+ 45,000
Arkansas	141	83	224	1,065,000	— 63	— 14	— 77	— 205,000
California	2,105	502	2,607	9,840,000	— 279	+ 10	— 269	— 739,000
Colorado	71	71	142	800,000	— 90	+ 25	— 65	— 428,000
Florida	2	31	33	179,000	— 1	+ 8	+ 7	+ 25,000
Illinois	1,850	653	2,503	6,550,000	+ 34	+ 31	+ 65	+ 164,000
Indiana	755	245	1,000	1,900,000	0	— 82	— 82	— 123,000
Kansas	2,985	542	3,527	10,810,000	+ 211	+ 32	+ 243	+ 176,000
Kentucky	927	176	1,103	1,710,000	+ 158	+ 37	+ 195	+ 195,000
Louisiana	1,691	350	2,041	12,550,000	— 324	+ 40	— 284	+1,616,000
Northern	971	109	1,080	3,880,000	— 464	— 10	— 474	— 248,000
Southern	720	241	961	8,670,000	+ 140	+ 50	+ 190	+1,864,000
Michigan	810	370	1,180	2,740,000	+ 228	+ 57	+ 285	+ 757,000
Mississippi	299	108	407	3,200,000	— 21	0	— 21	— 112,000
Montana	315	56	371	925,000	0	+ 26	+ 26	+ 106,000
New Mexico	513	56	569	2,720,000	— 22	— 15	— 37	+ 118,000
New York	885	0	885	1,330,000	— 459	0	— 459	— 603,000
Ohio	1,080	40	1,120	3,000,000	— 261	— 12	— 273	— 498,000
Oklahoma	3,140	685	3,825	14,000,000	— 322	—146	— 468	—1,515,000
Pennsylvania	2,187	38	2,225	3,700,000	— 948	+ 14	— 934	—1,468,000
Texas	9,372	2,670	12,042	54,280,000	— 311	+102	— 209	+1,533,000
North Central	2,570	945	3,515	10,300,000	— 382	+ 47	— 335	—1,012,000
West	2,760	280	3,040	15,270,000	— 177	— 34	— 211	— 158,000
Panhandle	457	18	475	1,500,000	— 194	+ 3	— 191	— 553,000
Eastern	610	205	815	4,360,000	+ 121	+ 63	+ 184	+ 977,000
Gulf Coast	1,740	610	2,350	15,250,000	+ 423	+ 31	+ 454	+3,254,000
Southwestern	1,235	612	1,847	7,600,000	— 102	— 8	— 110	— 975,000
Utah	14	23	37	175,000	+ 14	+ 5	+ 19	+ 100,000
West Virginia	813	82	895	2,530,000	+ 49	0	+ 49	+ 337,000
Wyoming	495	180	675	3,180,000	+ 15	+ 76	+ 91	+ 679,000
Miscellaneous	45	67	112	193,000	— 12	— 24	— 36	— 21,000
Total United States	30,497	7,053	37,550	137,532,000	—2,404	+176	—2,228	+ 140,000
27 Large operators	9,108	1,381	10,489	50,740,000	— 361	+ 69	— 292	+1,667,000
All other operators	21,389	5,672	27,061	86,792,000	—2,043	+107	—1,936	—1,527,000

COMPLETIONS

Nearly 40,000 Wells Completed Despite Material Shortage

REVIEW AND FORECAST

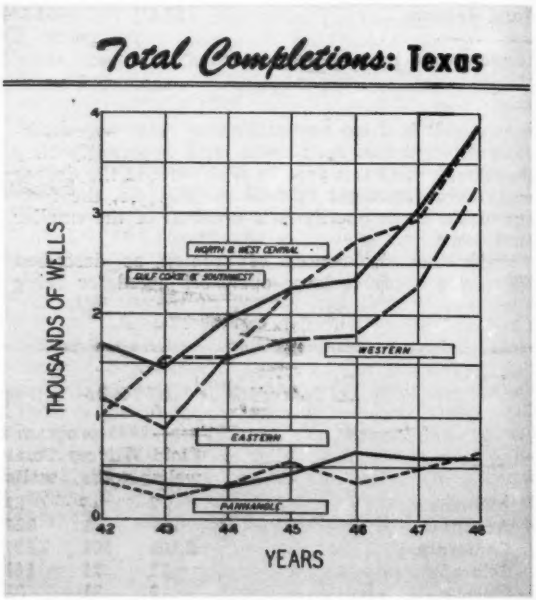
by John C. Casper

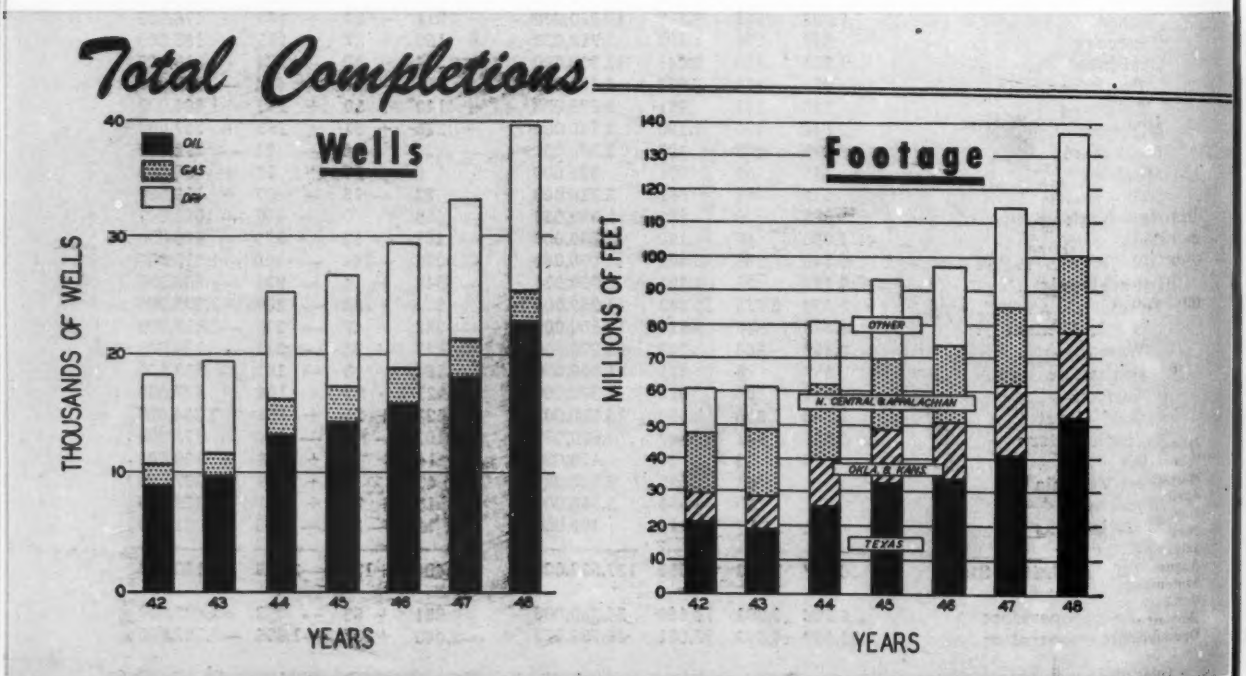
IN spite of the material shortage in 1948, the petroleum industry set another all-time record by completing 39,778 wells and 137,392,000 ft. of hole representing gains over 1947 of 6,656 wells or 20.1 per cent in total completions and 20.5 per cent in footage. The gains are still more impressive if the totals are considered without the Eastern area—New York, Pennsylvania, West Virginia, and Ohio. Completions for all other areas averaged 26.6 per cent more than in 1947.

Oil-well completions for the year totaled 22,585 compared with 17,999 in 1947, a gain of 4,586 wells or 25.5 per cent. Gas completions in 1948 totaled 2,897, a decrease of 406 wells. The number of dry holes and service wells increased 21 per cent to reach 14,296 or 2,478 more than in 1947.

Total completions included 6,877 wildcat wells and 32,901 development or field wells. These represent increases over 1947 of 25.9 per cent in wildcat drilling and 18.9 per cent in development completions. The big gain in wildcat completions indicates the emphasis given to exploration during the year. Stated in another way, wildcat wells accounted for 17.3 per cent of total completions in 1948 compared with 16.5 per cent in 1947.

In their all-out search for new oil, the operators moved farther out from developed areas last year and drilled more rank wildcats as evidenced by the





Total United States Completions by States

	Total comp.	Oil	Gas	Dry	Service	Average footage	Total comp. 1947
Alabama	21	1	0	20	0	5,260	29
Arkansas	301	151	5	145	0	4,218	329
California	2,876	2,395	21	460	0	3,678	2,053
Colorado	207	149	10	48	0	5,932	209
Florida	26	2	0	24	0	5,939	30
Georgia	3	0	0	3	0	4,594	5
Illinois	2,438	1,262	11	1,165	0	2,620	2,033
Indiana	1,082	518	40	519	5	1,870	681
Kansas	3,284	1,677	382	1,193	32	3,238	2,694
Kentucky	908	349	151	403	5	1,668	660
Louisiana	2,325	1,552	133	634	6	4,703	1,626
Northern	1,554	1,095	112	343	4	2,656	975
Southern	771	457	21	291	2	8,828	651
Michigan	895	355	30	435	75	2,215	909
Mississippi	428	250	16	161	1	7,738	491
Montana	345	191	69	85	0	2,375	309
Mo., Neb., Iowa	62	18	3	35	6	709	7
New Mexico	606	433	44	129	0	4,293	562
New York	1,344	675	0	0	669	1,438	1,531
Ohio	1,393	416	407	481	89	2,511	1,377
Oklahoma	4,293	2,417	258	1,588	30	3,614	3,846
Pennsylvania	3,159	1,595	228	66	1,270	1,636	3,238
Tennessee	58	13	1	44	0	1,290	17
Texas	12,251	7,619	542	4,011	79	4,305	9,301
North Central (9)	2,384	1,221	12	1,128	23	2,835	2,036
West Central (7-B)	1,466	711	48	703	4	3,107	877
West (7-C and 8)	3,251	2,756	31	464	0	4,745	2,287
Panhandle (10)	666	471	143	45	7	3,082	490
Eastern (5 and 6)	631	339	77	213	2	5,361	597
Gulf Coast (2 and 3)	1,896	1,057	133	688	18	6,327	1,499
Southwest (1 and 4)	1,957	1,064	98	770	25	4,382	1,513
Utah	18	2	3	13	0	4,140	4
West Virginia	846	148	535	160	3	2,592	882
Wyoming	584	394	7	183	0	4,282	267
Miscellaneous	25	3	1	21	0	3,288	32
Total 1948	39,778	22,585	2,897	12,026	2,270	3,454	.....
Total 1947	33,122	17,999	3,305	9,538	2,280	3,443	33,122
Total 1946	29,229	15,851	3,090	8,051	2,237	3,321	.....
Total 1945	26,879	14,297	2,899	7,471	2,212	3,469	.....
Total 1944	25,262	13,029	3,067	*9,166	.....	3,234	.....
Total 1943	19,477	9,717	1,897	*7,863	.....	3,250	.....
Total 1942	18,150	8,501	2,089	*7,560	.....	3,158	.....
Total 1941	32,140	19,761	3,014	*9,365	.....	3,065	.....

*Includes service wells.

drop in the ratio of discoveries to total wildcats. In 1948, 15 per cent of wildcats resulted in oil wells compared with 15.8 per cent for the previous year.

In the breakdown of total completions, the five top-ranking states were in the following order: Texas, Oklahoma, Kansas, Pennsylvania, and California, with the combined total accounting for 65 per cent of all completions. Operators in Texas drilled 30.8 per cent of all wells last year.

On a basis of footage drilled, the states take on a

SERVICE WELL COMPLETIONS
(By months)

	Pennsylvania	New York	Other states	Total U. S.
January	93	42	21	156
February	86	62	22	170
March	89	71	15	175
April	103	50	28	181
May	97	49	37	183
June	117	61	33	211
July	111	57	33	201
August	120	60	32	212
September	121	59	36	216
October	120	55	36	211
November	121	59	19	199
December	92	44	19	155
Total 1948	1,270	669	331	2,270

DISTILLATE WELL COMPLETIONS
(By months)

	Louisiana	Texas	Other states	Total U. S.
January	7	16	2	25
February	9	11	1	21
March	7	8	5	20
April	6	5	2	13
May	7	8	6	21
June	15	11	3	29
July	6	7	7	20
August	14	11	3	28
September	9	13	5	27
October	6	10	4	20
November	9	10	3	22
December	4	12	7	23
Total 1948	99	122	48	269

WILDCAT COMPLETIONS BY STATES

State—	Comp.	Oil	Gas	Dry
Alabama	19	0	0	19
Arkansas	97	6	0	91
California	492	119	7	366
Colorado	46	1	3	42
Florida	23	0	0	23
Georgia	3	0	0	3
Illinois	622	91	3	528
Indiana	327	48	5	274
Kansas	510	65	8	437
Kentucky	139	25	2	112
Louisiana	310	77	10	223
Northern	119	8	3	108
Southern	191	69	7	115
Michigan	313	23	7	283
Mississippi	108	5	0	103
Montana	30	4	0	26
Mo., Neb., Iowa	30	0	0	30
New Mexico	71	8	4	59
New York	0	0	0	0
Ohio	52	3	11	38
Oklahoma	831	144	29	658
Pennsylvania	24	0	9	15
Tennessee	40	3	1	36
Texas	2,588	377	104	2,087
North Central (Dist. 9)	429	53	3	373
West Central (Dist. 7-B)	469	76	11	382
West (Dist. 7-C & 8)	314	72	7	235
Panhandle (Dist. 10)	15	1	3	11
Eastern (Dist. 5 & 6)	142	13	1	128
Gulf Coast (Dist. 2 & 3)	579	101	39	439
Southwest (Dist. 1 & 4)	620	61	40	519
Utah	18	2	3	13
West Virginia	82	3	36	43
Wyoming	104	25	3	76
Miscellaneous	18	0	1	17
Total 1948	6,877	1,029	245	5,602
Total 1947	5,461	864	248	4,349

DEVELOPMENT COMPLETIONS BY STATES

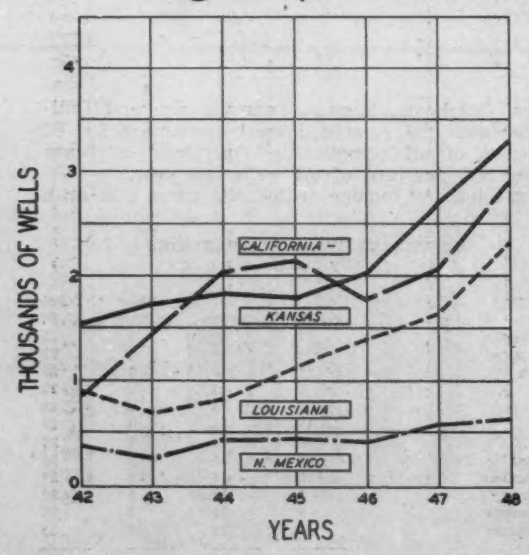
State—	Comp.	Oil	Gas	Dry
Alabama	2	1	0	1
Arkansas	204	145	5	54
California	2,384	2,276	14	94
Colorado	161	148	7	6
Florida	3	2	0	1
Georgia	0	0	0	0
Illinois	1,816	1,171	8	637
Indiana	755	470	35	250
Kansas	2,774	1,612	374	788
Kentucky	769	324	149	296
Louisiana	2,015	1,475	123	417
Northern	1,435	1,087	109	239
Southern	580	388	14	178
Michigan	582	332	23	227
Mississippi	320	245	16	59
Montana	315	187	69	59
Mo., Neb., Iowa	32	18	3	11
New Mexico	535	425	40	70
New York	1,344	675	0	669
Ohio	1,341	413	396	532
Oklahoma	3,462	2,273	229	960
Pennsylvania	3,135	1,595	219	1,321
Tennessee	18	10	0	8
Texas	9,683	7,242	438	2,003
North Central (Dist. 9)	1,955	1,168	9	778
West Central (Dist. 7-B)	997	635	37	325
West (Dist. 7-C & 8)	2,937	2,684	24	229
Panhandle (Dist. 10)	651	470	140	41
Eastern (Dist. 5 & 6)	489	326	76	87
Gulf Coast (Dist. 2 & 3)	1,317	956	94	267
Southwest (Dist. 1 & 4)	1,337	1,003	58	276
Utah	0	0	0	0
West Virginia	764	145	499	120
Wyoming	480	369	4	107
Miscellaneous	7	3	0	4
Total 1948	32,901	21,556	2,651	8,694
Total 1947	27,561	17,135	3,057	7,469

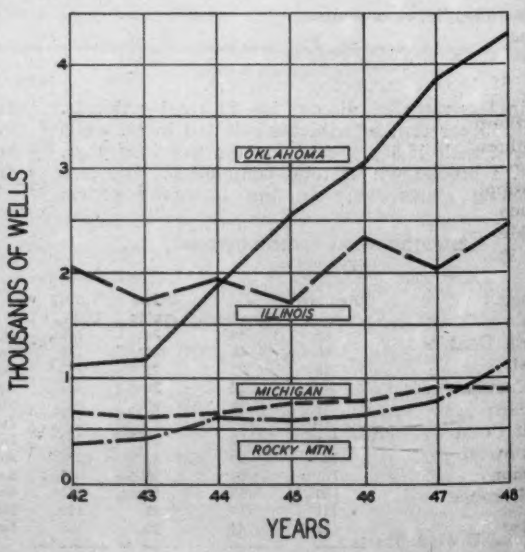
different order. Texas led with 38.4 per cent of the total, followed in order by Oklahoma with 11.3 per cent, Louisiana with 8 per cent, Kansas with 7.7 per cent, and California with a little less than 7.7 per cent. The five-state total accounts for 73.1 per cent of all the hole drilled in 1948.

Another analysis of the state breakdown shows where the major gains were made during the year. Out of the total increase of 6,656 wells, the gains in five states add up to 5,509 wells or 82.8 per cent of the total additional wells drilled for the year. These were: Texas with 44.3 per cent of the total increase, California with 12.4 per cent, Louisiana with 10.5 per cent, Kansas with 8.9 per cent, and Oklahoma with 6.7 per cent.

The Rocky Mountain area, made up of Wyoming, Colorado, Montana, and Utah, has had only a small portion of total well completions each year. Even in

Total Completions .. By States





DRILLING METHODS—1948

State—	Total	Rotary	Cable
Alabama	21	21	0
Arkansas	301	299	2
California	2,876	2,876	0
Colorado	207	201	6
Florida	26	26	0
Georgia	3	3	0
Illinois	2,438	2,196	242
Indiana	1,082	776	306
Kansas	3,284	2,987	297
Kentucky	908	519	389
Louisiana	2,325	2,323	2
Northern	1,554	1,552	2
Southern	771	771	0
Michigan	895	391	504
Mississippi	428	419	9
Montana	345	199	146
New Mexico	606	542	64
New York	1,344	0	1,344
Ohio	1,393	0	1,393
Oklahoma	4,293	3,862	431
Pennsylvania	3,159	0	3,159
Texas	12,251	11,407	844
North	3,850	3,412	438
West	3,251	2,904	347
Panhandle	666	*626	40
East	631	628	3
Gulf Coast	1,896	1,880	16
Southwest	1,957	1,957	0
Utah	18	17	1
West Virginia	846	0	846
Wyoming	584	523	61
Miscellaneous	145	64	81
Total	39,778	29,651	10,127

*Includes wells drilled by rotary and finished by cable tools.

1948, this area accounted for a little less than 3 per cent of all wells drilled. However, the increasing interest in the area as a possible major source of new oil caused a big relative jump in drilling in 1948, particularly in Wyoming. Total completions in the area were 46.3 per cent greater than last year while the state of Wyoming led the entire country with an increase of 118.7 per cent.

TOTAL COMPLETIONS BY MONTHS

	Comp.	Oil	Gas	Dry	Footage
January	3,164	1,786	265	1,113	11,210,695
February	2,436	1,418	183	835	8,528,485
March	2,796	1,665	215	916	9,767,073
April	2,954	1,701	196	1,057	10,215,554
May	3,257	1,870	213	1,174	10,930,387
June	3,289	1,859	222	1,208	10,919,052
July	3,794	2,129	292	1,373	13,175,002
August	3,497	1,957	251	1,289	11,988,229
September	3,820	2,176	285	1,359	13,172,377
October	3,706	2,024	280	1,402	12,593,030
November	3,429	1,964	226	1,239	11,799,171
December	3,636	2,036	269	1,331	13,091,793
Total 1948	39,778	22,585	2,897	14,296	137,391,848

WILDCAT COMPLETIONS BY MONTHS

	Comp.	Oil	Gas	Dry	Footage
January	588	84	20	484	2,410,581
February	405	71	18	316	1,799,711
March	428	70	23	335	1,848,117
April	526	76	27	423	2,264,477
May	542	90	17	435	2,268,975
June	580	88	25	467	2,337,065
July	694	136	25	533	2,933,233
August	623	90	22	511	2,707,548
September	627	89	16	521	2,700,043
October	679	79	18	581	2,739,269
November	576	79	14	483	2,402,779
December	609	77	19	513	2,783,148
Total 1948	6,877	1,029	246	5,602	29,194,924

DEVELOPMENT COMPLETIONS BY MONTHS

	Comp.	Oil	Gas	Dry	Footage
January	2,576	1,702	245	629	8,800,134
February	2,031	1,347	165	519	6,728,774
March	2,368	1,595	192	581	7,918,956
April	2,428	*1,625	169	634	7,951,077
May	2,715	1,780	196	739	8,661,412
June	2,709	1,771	197	741	8,581,987
July	3,100	1,993	267	840	10,241,769
August	2,874	1,867	229	778	9,281,681
September	3,193	2,087	267	839	10,472,334
October	3,027	1,945	262	820	9,833,761
November	2,853	1,885	212	756	9,396,382
December	3,027	1,959	250	818	10,308,651
Total 1948	32,901	21,556	2,651	8,694	108,198,928

Total Footage Drilled in U. S. by Years

(Thousands of feet)

	1941	1942	1943	1944	1945	1946	1947	1948
Arkansas	911	1,033	1,095	1,190	828	728	1,409	1,270
California	6,511	3,359	4,793	7,527	8,671	7,509	8,764	10,579
Colorado	101	123	83	207	352	1,063	1,151	1,228
Illinois	9,462	5,027	4,668	4,958	4,565	5,925	5,251	6,386
Indiana	981	736	428	581	500	1,071	1,206	2,023
Kansas	6,353	4,795	5,808	6,194	5,877	6,556	8,690	10,634
Kentucky	1,189	417	1,182	1,863	1,275	1,175	1,194	1,515
Louisiana	9,125	5,679	4,337	5,723	7,774	8,464	8,709	10,934
Northern	2,361	1,827	1,199	1,408	2,117	3,175	2,912	4,128
Southern	6,764	3,852	3,138	4,315	5,657	5,289	5,797	6,806
Michigan	1,998	1,673	1,548	1,620	1,963	1,749	1,935	1,983
Mississippi	1,406	377	635	776	2,403	1,971	4,131	3,312
Montana	612	728	533	946	754	661	630	819
New Mexico	754	1,148	770	1,322	1,508	1,624	2,512	2,602
N. Y., Pa., W. Va.	12,212	6,923	9,071	10,038	10,225	9,985	9,702	9,293
Ohio	3,354	2,875	2,493	2,730	2,689	3,402	3,913	3,498
Oklahoma	5,531	3,934	3,945	7,172	10,048	9,771	12,151	15,515
Texas	37,268	21,064	19,030	26,621	32,495	34,352	41,029	52,746
North Central	6,460	3,088	4,097	4,395	5,864	7,065	8,544	11,312
West	9,725	5,434	4,195	7,572	8,497	8,815	10,809	15,428
Panhandle	2,143	1,013	546	984	1,686	943	1,593	2,053
Eastern	4,435	2,046	1,769	1,867	2,504	3,792	3,070	3,383
Gulf Coast	6,980	4,410	3,618	9,491	11,690	11,599	9,559	11,995
Southwest	7,525	5,073	4,805	2,312	2,254	2,138	7,454	8,575
Wyoming	496	793	557	907	967	716	1,203	2,501
Miscellaneous	268	105	302	371	346	334	481	554
Total United States	98,532	60,789	61,278	80,746	93,240	97,056	114,061	137,392

DISCOVERIES

Wildcat Success Ratio Stays High Though Number Takes Big Jump

REVIEW AND FORECAST

by Polly De Armond

EXPLORATION for new oil in the United States during 1948 was on the greatest scale ever seen, and beyond the imagination of most exploration men in prewar days. The 1948 campaign was a record-smashing 6,877, an increase of 1,416 over 1947. In 1948, 52.2 per cent more wildcats were drilled than in 1946, 2 years previously, and 26 per cent more than in 1947.

The reserves data show that these relatively enormous postwar exploration campaigns have paid off by supplying enough new oil to meet the unexpectedly high demands, and at the same time hold reserves at approximately the same ratio to production as existed at the end of the war. This large expansion in exploratory drilling has not resulted in any poorer quality of sites drilled. At least the overall statistical results do not indicate anything of the kind.

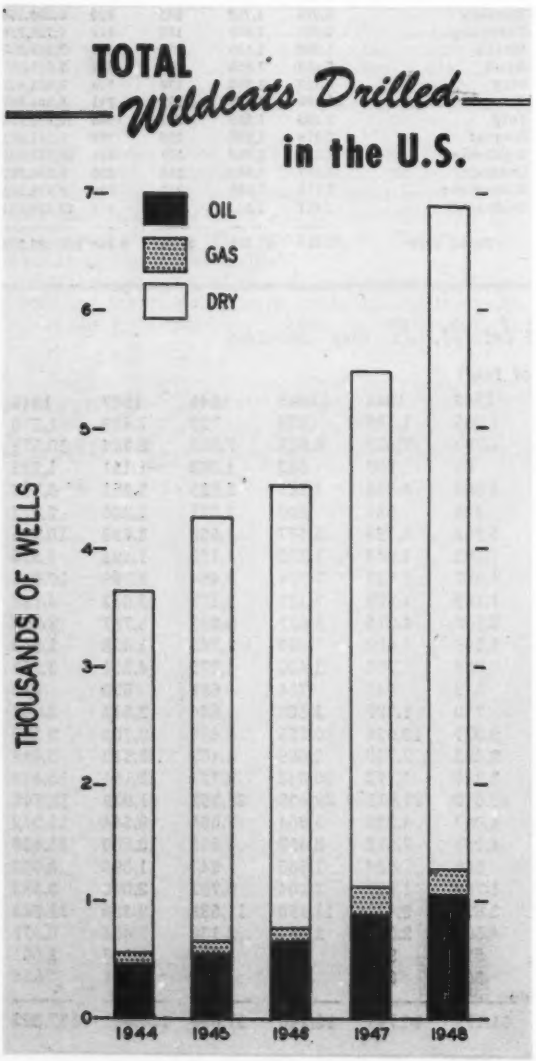


TABLE 1—U. S. EXPLORATION RESULTS IN 1948

	Total wildcats	Per cent oil	Per cent gas	Per cent dry
Texas	2,568	14.7	4.0	81.3
California	492	24.2	1.4	74.4
Louisiana	310	24.8	3.2	72.0
Oklahoma	831	17.3	3.5	79.2
Kansas	510	12.7	1.6	85.7
Illinois	622	14.6	0.5	84.9
Wyoming	104	24.0	2.9	73.1
Other states	1,440	9.1	5.7	85.2
Total 1948	6,877	15.0	3.6	81.4
Total 1947	5,461	15.8	4.5	79.7
Total 1946	4,518	14.1	2.8	83.1

The dry-hole ratio in 1946 was 83.1 per cent; in 1947 it was 79.7 per cent; in 1948 it was 81.4 per cent. Therefore an increase of over half in volume of exploratory drilling between 1946 and 1948, resulted in a dry-hole percentage last year that was actually a shade lower than in 1946.

Texas-New Mexico

The Permian basin still held the limelight in the Texas area. Developments along its southern portion continued, the most important being the discovery of three pay formations in fairly new Benedum field. Activity along the eastern edge picked up, with several counties getting their first Pennsylvanian production, which continued to increase in importance as a source of reserves. Pre-Permian production was extended about 50 miles northwest from the nearest such pay in Jones Ranch field of Gaines County, by Mid-Continent Petroleum Corp.'s Crossroads strike in Lea County, New Mexico. Elsewhere in Texas, exploratory work was not so spectacular but highly successful, particularly in Southwest Texas. Humble Oil & Refining Co. found condensate in the lower Frio at the state's new deepest producer.

California

One of the most important discoveries in the state for several years was brought in by Norris Oil Co. in Cuyama Valley. The strike was followed up

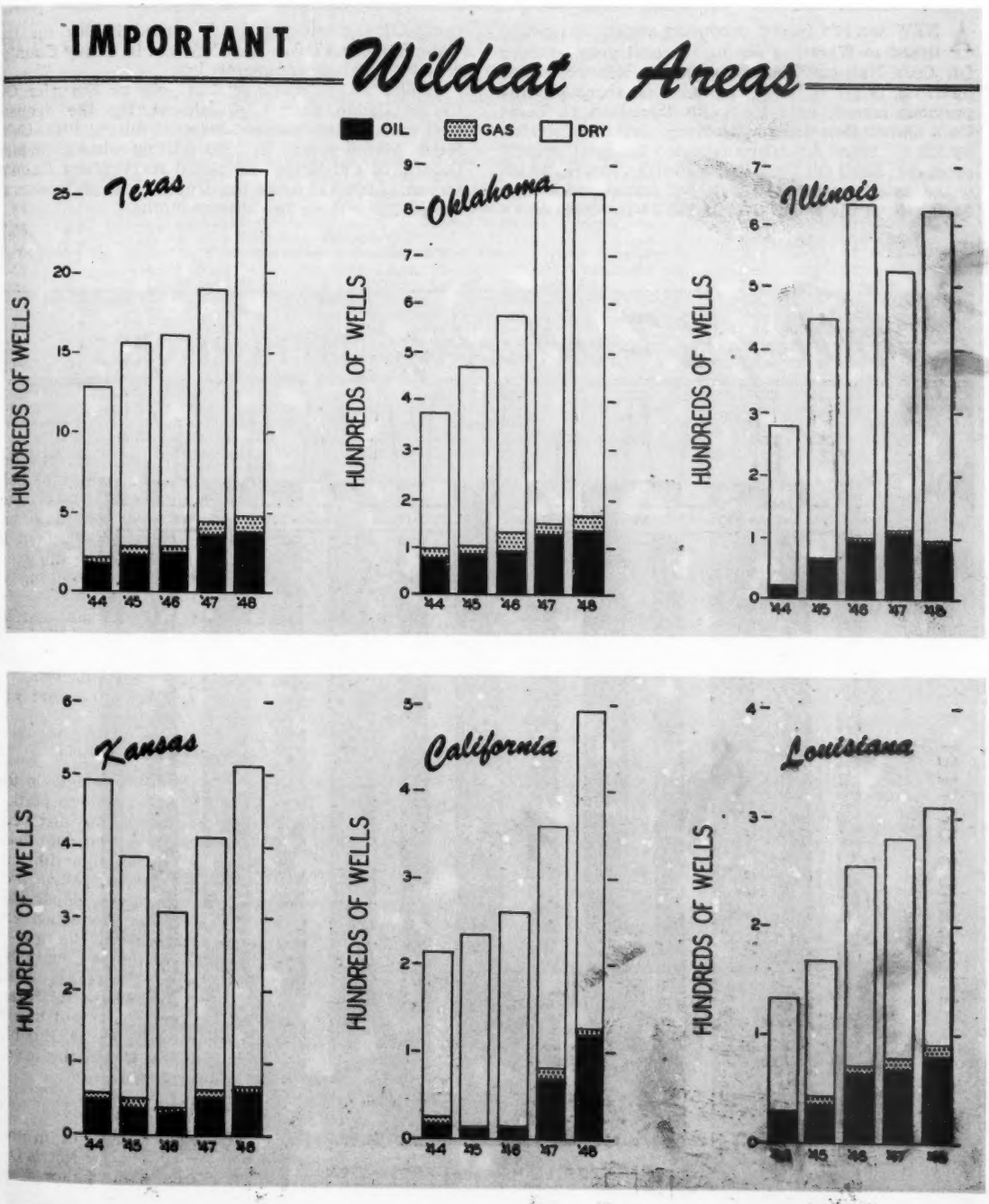
by Richfield Oil Corp., and an extensive drilling campaign is still under way in this area, designated as Russell Ranch field. Other areas where discoveries helped California move up from seventh to sixth on the basis of reserves in new fields were: Guijarral Hills, Fresno County; Newhall, Los Angeles County; Kettleman Middle Dome, Kings County; Kern County, between Ten Section and Gosford fields.

Louisiana

Despite the still-unsettled tidelands question, companies continued drilling offshore in the Gulf of Mexico. The 1947 discovery of oil in Block 32 (Ship Shoal area), approximately 12 miles off Terrebonne Parish, started operations in the distant offshore waters which resulted in the opening of seven producing areas during 1948 off the coasts of Iberia, Jefferson, Plaquemines, Terrebonne and Vermilion parishes. The trend toward deeper wildcats continued in South Louisiana, and late in the year interest was centered at Week's Island field where Shell Oil Co., Inc., was testing a new oil sand which at first had indications of becoming the world's deepest production. There were 32 new fields opened in this part of the state and 44 new producing zones added to already-proven areas.

Oklahoma

There were 52 new oil pools and 13 new gas areas noted for Oklahoma (some later included in older districts). Further expansion of the state's southern "Golden Trend" region was the most prominent in the addition of new reserves.



RECORD BREAKERS

New World's Record Producing Depth Established in 1948

REVIEW AND FORECAST

by Polly De Armond

A NEW world's record producing depth was established in Wyoming during the past year by Pure Oil Co.'s Natrona County wildcat which recovered oil from 14,307 ft., total depth. This surpassed the previous record, held by South Louisiana at Texas Co.'s Queen Bess Island discovery, Jefferson Parish, by 529 ft. South Louisiana reported the next deepest producer: Shell Oil Co.'s Iberia Parish venture, which tested an oil sand at 14,912 ft., but reshot and is producing from the interval at 14,243-55 ft. Oklahoma's prospective producing depth record holder for the state, Stanolind Oil & Gas Co.'s test in Grady County, failed to produce commercially.

The 17,832-ft. mark set last year by Superior Oil Co. in Caddo County, Oklahoma, for the deepest well ever drilled, was not bettered during 1948. California placed second in deep drilling when Standard Oil Co. of California completed its Ventura County test at 17,696 ft., while the Upper Gulf of Texas retained third place in drilling depths.

U. S. Drilling Depth Records by States

State—	Well and location; county—	Result	Year comp.	Deepest formation	Total footage
Oklahoma	Superior Oil 51-11 Weller, 11-8n-12w; Caddo Co.	Dry	1947	Pennsylvanian	17,823
California	Standard of California 1 Maxwell, 23-2n-23w; Montalvo Co.	Dry	1948	Pliocene	17,696
Upper Gulf Texas	Phillips 3 Schoeps, Millican Salt Dome; Brazos Co.	Dry	1945	Cretaceous	16,655
East Texas	Humble Oil & Refining Co. 1 McWatters, Freestone Co.	Drlg.	....	Cotton Valley	16,347
South Louisiana	Texas Co. 4 State-Barataria Bay, Queen Bess Island, Jeff.	Dry	1948	Miocene	16,106
Lower Gulf Texas	Texas Co. 6 Yturria L. & L. Co., Raymondville; Willacy Co.	Dry	1947	.....	16,006
Mississippi	Superior Oil 1 Bradford, 1-3n-13w; Forrest Co.	Dry	1946	.....	15,730
South Texas	Quintana Petroleum 3-D So. Tex. Syndicate; McMullen Co.	....	1945	Cretaceous	15,301
West Texas	Phillips 1 Price, T. C. Railway Sur.; Pecos Co.	....	1944	Ellenburger	15,279
Alabama	Humble Oil & Refining Co. 2 Williams, 21-6n-4w; Washington	Drlg.	....	.....	15,079
Wyoming	Pure Oil Co. 1 Unit, 11-33n-84w; Natrona Co.	Oil	1948	Frontier	14,307
South Central Texas	Stanolind Oil & Gas Co. 1 Henry; McMullen Co.	Dry	1948	.....	14,048
Southeast New Mexico	Phillips 4 State-Lea-Mex., Maljamar; Lea Co.	....	1945	Ordovician	13,998
Florida	Humble Oil & Refining Co. 2 Gulf Coast Realty; Collier Co.	Dry	1944	Lime	13,512
North Louisiana	Union Prod. 1 McDonald Unit, No. Lisbon field; Claiborne	....	1942	Smackover	12,952
Colorado	Texas Co.-California Co. 20 Unit, 34-3n-94w; Rio Blanco Co.	Dry	1946	Madison	12,702
East Texas Border	Humble Oil & Refining Co. 1 Pickering Lumber; Shelby Co.	....	1946	Jurassic	12,221
Panhandle Texas	Phillips Petroleum Co. 1 Jenkins; Roberts Co.	....	1948	.....	11,730
Arkansas	Stanolind Oil & Gas Co. 1 Bodcaw, 29-19s-23w; Lafayette Co.	....	1948	.....	11,434
Michigan	Ohio Oil Co. & Pure Oil Co. 1 Reinhardt, 35-22n-2e; Ogemaw	Dry	1948	Cambro-Ord.	11,012
Washington	Standard Oil Co. of California 1 Alderwood; Snohomish Co.	Dry	1947	.....	11,002
Utah	Pacific-Western 1 Unit, 24-14s-7e; Carbon Co.	Gas†	1948	Permian	*10,980
North Dakota	California Co. 1 Kamp, 3-154n-96w; Williams Co.	Dry	1938	Devonian	10,281
Montana	Carter-Phillips 1 Weazlehead, 28-34n-12w; Glacier Co.	Dry	1946	Madison	10,102
Pennsylvania	Manufacturers Heat & Light 1 Hackenberry; Butler Co.	Dry	1944	Cambrian	10,096
North Carolina	Standard Oil of N. J. 1 Hatteras Light; Dare Co.	Dry	1946	Granite	10,054
West Virginia	Hope Natural Gas 8517 Gribble, Grant dist.; Harrison Co.	Dry	1941	Queenston	10,018
Northwest New Mexico	Southern Union Prod. 9 Barker Creek, 21-32n-14w; San Juan	Gas	1945	Pennsylvanian	9,468
North Central Texas	Standard Oil of Texas 2 Beasley, McKerley Sur.; Cooke Co.	....	1946	.....	9,164
New York	New Penn Dev. 1 Herrington, Woodhull Twp.; Steuben Co.	Gas	1944	Oswego	8,825
Kansas	Stanolind Oil & Gas Co. 1 Feathers, 15-35s-33w; Seward Co.	Gas	1947	Crystalline	8,243
Maryland	Snee 1 Scharizer; Garrett Co.	Dry	1941	Helderberg	8,165
South Dakota	Northern Ordnance 1 Harding School Land, 1-17n-1e; Harding Co.	Dry	1943	St. Peter	8,000
Ohio	Penn-Ohio 1-C Knowlton, Sec. 10, Indep. Twp.; Washington Co.	Dry	1933	Silurian	7,889
Georgia	Warren & Robinson 1 Chandler, Ld. dist. 25; Early Co.	Dry	1944	Granite	7,320
Illinois	Pure Oil Co. 3 Billington, 26-1n-7e; Wayne Co.	Dry	1940	St. Peter	7,207
Nebraska	Union Oil of California 15 Agate; Sioux Co.	Dry	1938	Pennsylvanian	6,846
Indiana	Continental 1 Cooper Est., 13-3s-14w; Gibson Co.	Dry	1946	Trenton	6,405
Kentucky	California Co. 1 Spears, 13-L-57; Lincoln Co.	Dry	1946	Granite	6,117
Tennessee	California Co. 1 Beeler; Giles Co.	Dry	1947	Granite	5,750
Iowa	Oil Development 1 Wilson; Page Co.	....	1930	Cambrian	5,305
New Jersey	W. & K. Oil 1 Mathews, Jackson Mills; Ocean Co.	Dry	1929	Wissahickon	5,022
Missouri	Strake Petroleum 1 Russell; Pemiscot Co.	Dry	1941	Cambrian	4,740
South Carolina	Parris Island; Beaufort Co. (water supply well)	Dry	1940	Crystalline	3,450

*Hole lost at 12,146 ft., whipstocked and redrilled to 10,980 ft. †CO_2

U. S. Producing Depth Records by States

State—	Well and location; county—	Result	Year comp.	Producing formation	Producing footage
Alabama	Hunt Oil Co. 4 Land, Gilbertown field; Choctaw Co.	Oil	1945	Eutaw	3,624
Arkansas	Tide Water-Seaboard 1 Bandow, Patfonfield; Lafayette Co.	Oil	1944	Smackover	9,330
California	Lloyd Corp. 24 Lloyd Corp., 23-3n-23w; Ventura Co.	Oil	1948	Pliocene	13,907
Colorado	Texas Co.-California Co. 10 Unit, 26-3n-94w; Rio Blanco Co.	Oil	1941	Morrison	7,198
East Texas	Humble Oil & Refining Co. 1 Curtis, Larissa field; Cherokee Co.	Oil	1942	Pettit	10,312
East Texas Border	Magnolia Petroleum Co. 1 Orr, Fowler Sur.; Marion Co.	Oil	1946	Travis Peak	7,577
Florida	Humble Oil & Refining Co. 1 Gulf Coast, Sunniland field; Collier Co.	Oil	1943	Glen Rose	*11,626
Illinois	Kingwood Oil Co. 24-A Shanafelt, 20-2n-2e; Marion Co.	Oil	1943	Trenton	4,657
Indiana	Lewis 1 Hill, 35-3s-14w; Posey Co.	Oil	1939	McClosky	3,144
Kansas	Olson Drilling 3 Morrison, Morrison field; Clark Co.	Oil†	1938	Viola	6,481
Kentucky	United Carbon Co. 1 Howe; Pike Co.	Gas	1932	Devonian	5,170
Lower Gulf Texas	Sun Oil Co. 1 Thompson, W. Goliad field; Goliad Co.	....	1945	Wilcox	11,149
Michigan	Pure Oil Co. 1 Freer, Orient field; Clare Co.	Oil	1946	Richfield	5,100
Mississippi	Gulf Refining Co. 1 Majors, 29-6n-11w; Jones Co.	Oil	1948	Comanche	13,062
Missouri	Cities Service Oil Co. 1 Cook, Tarkio field; Atchison Co.	Oil	1940	Bartlesville	1,444
Montana	Stanolind Oil & Gas Co. 1 Laerr "B," 29-9s-23e; Carbon Co.	Oil	1948	Madison	6,860
Nebraska	Skelly Oil Co. 1 Wiltze, Dawson field; Richardson Co.	Oil	1942	Hunton	2,900
New York	Kane 1 Lewis, West Union Twp.; Steuben Co.	Gas	1942	Oriskany	5,222
North Central Texas	Standard Oil of Texas 2 Beasley, McKerley Sur.; Cooke Co.	....	1946	Ellenburger	8,940
North Louisiana	James & Co. et al, 2 Williamson, 28-23n-8w; Claiborne Parish	Oil	1948	Smackover	10,789
Northwest New Mexico	Southern Union Prod. 9 Barker Creek, 21-32n-14w; San Juan Co.	Gas	1945	Pennsylvanian	9,468
Ohio	East Ohio Gas Co. 1 Phillips, Sec. 23, Washington Twp.; Harrison Co.	Gas	1941	Silurian	*5,899
Oklahoma	Magnolia Petroleum 1 Speirs, Chitwood field; Grady Co.	Oil	1946	Pennsylvanian	11,736
Panhandle Texas	Canadian River Gas Co. 9 Bivens "A," Hartley Co.	Gas	1929	Permian	3,830
Pennsylvania	American Locomotive Co. 5 Steiner, Unity Twp.; Westmoreland Co.	Gas	1946	Oriskany	8,014
South Central Texas	Quintana Petroleum Co. 1 Mull, Mull field; Atascosa Co.	Oil	1946	Edwards	9,810
South Louisiana	Shell Oil Co. A-1 Smith, 18-14s-7e, Weeks Island; Iberia Parish	Oil	1948	.....	14,255
South Texas	Jones 2-C Ezzell, San Caja field; McMullen Co.	Oil	1944	Wilcox	6,922
Southeast New Mexico	Mid-Continent Petroleum Corp. 1 Sawyer, 27-9s-36e; Lea Co.	Oil	1948	Devonian	12,215
Tennessee	Alvin York 2 Print Huff; Pickett Co.	Oil	1947	Knox	1,702
Upper Gulf Texas	Humble Oil & Refining Co. 1 So. Mayes Unit; Chambers Co.	Cond.	1948	Lower Frio	12,026
Utah	Equity Oil Co. 1 Meagher, 23-5s-22e; Uinta Co.	Oil	1948	Weber	4,152
West Texas	Magnolia Petroleum Co. 1-A TXL; Upton Co.	Oil	Tstg.	Ellenburger	12,885
West Virginia	Ohio Oil Co. 1 Kay Kendall et al, Dry Fork dist.; Tucker Co.	Gas	1946	Oriskany	*8,410
Wyoming	Pure Oil Co. 1 Unit, 11-33n-84w; Natrona Co.	Oil	1948	Frontier	14,307

*Total depth figure. †Now abandoned.

60% of Oil Found to Date Is Under 130 Major Fields

REVIEW AND FORECAST

by Charles J. Deegan

YOU are interested in the petroleum industry if you are reading this story. The chances are about 99 out of 100 that either a substantial part or all of your earning power is tied up with this industry. If true in your case, then the 130 fields discussed in this article are responsible for the major portion of your earning power.

Since 1859 the number of oil fields found in the United States is variously estimated at anywhere between 5,000 and 15,000. Take your choice of either the low, the high, or any number in between. Few people will be able to dispute your claim for any given number.

If none of these 130 fields had been found, but all the other thousands had been discovered, there would be no such thing in existence as the modern petroleum industry. For these fields have accounted for almost 60 per cent of all the oil produced to January 1, 1949; they contain a little over 60 per cent of today's proven reserves. The modern petroleum industry could not have been built, even to 40 per cent of its present scale, if these fields had not been found. The reason—these were the rich fields, the fields that brought in the big profits that were in turn poured back into more capital investment. The big profits from these fields attracted outside capital into the petroleum industry, and this too was plowed into building the whole giant structure that is the modern petroleum industry today.

You can bet, and probably give odds, that not a single major oil company exists today that has not been built on production and earnings from rich leases in one or more of these 130 fields. In fact, for most major companies, the law of averages indicates that from 50 to 60 per cent of their past and present production has come and is coming from one or more of these fields; and that from 50 to 60 per cent of the company's proven reserves also lie in one or more of them.

Pipe-line networks, feeding refineries on a huge scale; both have been built on oil largely from one or more of these 130 fields. There probably would have been little chance for the development of modern tankers without the crying need for transporting the huge volumes of oil from these fields.

But now it appears that the odds against profitable wildcatting are even greater. If only 130 fields out of a 5,000 to 15,000 total are big profit makers, then every time you find a new field with a wildcat you still lack a lot of being sure that you will make enough profit to pay for your dry holes. The odds seem to be multiplied by 50 to 100 times. For instance, you drill six wildcats hunting new fields, and hit one out of the six. But the odds seem to indicate you must drill 50 to 100 hits before you find a major field. That means that perhaps only one out of 300 to 600 wildcats drilled will find a really big accumulation of oil. These odds may strike you as high, or as low, but the figures do seem to indicate that the industry as a whole must wildcat some-

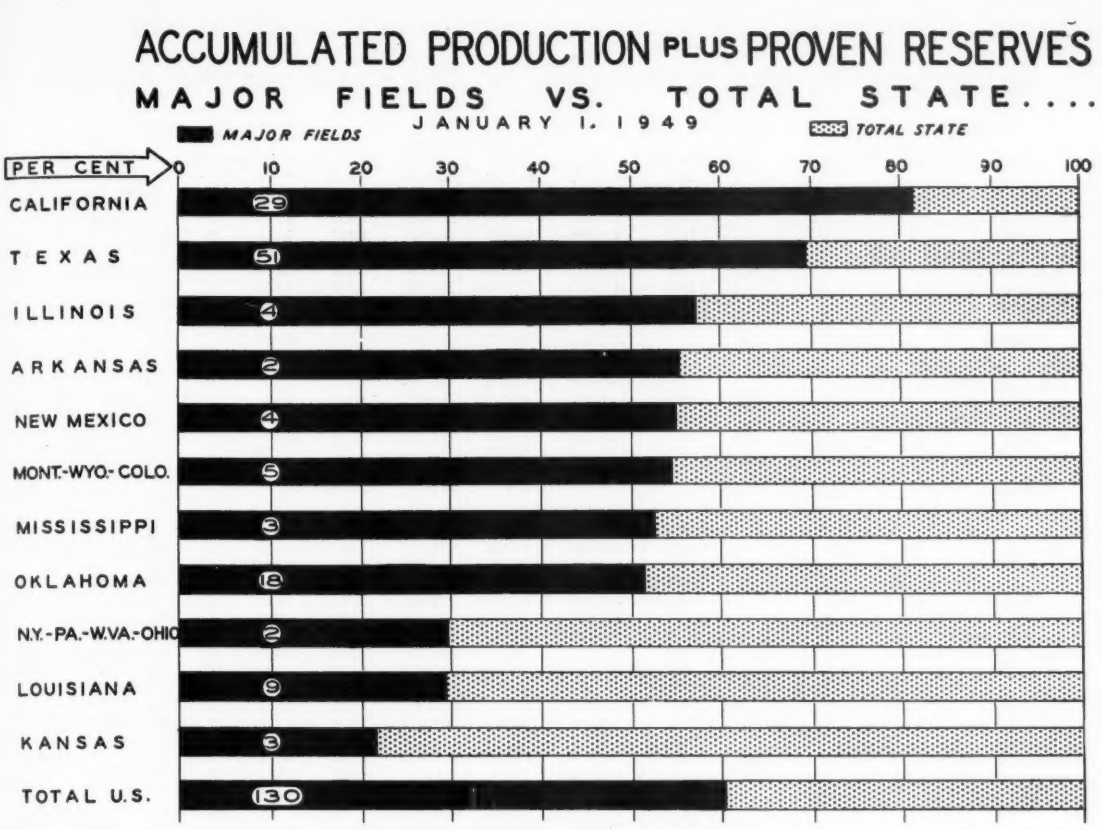
TABLE 1—COMPARISON MAJOR FIELDS VS. TOTAL STATE OIL FOUND TO JANUARY 1, 1949
(Millions of barrels)

State—	No. major* fields	Ultimate production† Major fields	Ultimate production† All fields	% by major fields
Texas	51	18,280	26,314	69.5
California	29	9,410	11,583	81.2
Oklahoma	18	3,591	6,993	51.4
Louisiana	9	1,260	4,260	29.6
N. Y.-Pa.-W. Va.-Ohio	2	761	2,550	29.8
Mont.-Wyo.-Colo.	5	1,205	2,209	54.5
Kansas	3	545	2,537	21.5
Illinois	4	895	1,769	57.4
New Mexico	4	640	1,162	55.1
Arkansas	2	585	1,056	55.4
Mississippi	3	370	705	52.5
All other states	0	0	908	0
Total U. S.	130	37,542	62,046	60.5

*Fields with estimated ultimate production of 100 million barrels or more. †Accumulated production to January 1, 1949, plus estimated proven reserves.

TABLE 2—COMPARISON MAJOR FIELDS VS. TOTAL STATE PRODUCTION DURING 1948
(Millions of barrels)

State—	No. major fields	Prod. major fields	Prod. total state	% from major fields
Texas	51	554	922	60.1
California	29	249	345	72.2
Oklahoma	18	60	155	38.7
Louisiana	9	39	190	20.5
Mont.-Wyo.-Colo.	5	33	82	40.2
New Mexico	4	20	48	41.7
Kansas	3	18	108	16.7
Mississippi	3	18	47	38.3
Illinois	4	15	64	23.4
Arkansas	2	8	32	25.0
N. Y.-Pa.-W. Va.-Ohio	2	15	23	65.2
Miscellaneous	0	0	35	0
Total U. S.	130	1,029	2,051	50.2



where on that order of magnitude to find a new major field.

A gradual realization of this condition is probably responsible for one trend of thinking among at least some executives and research men. Their line of reasoning is something like this. "Major oil fields are rare, but they are the big profit makers. Our present exploration methods fail to recognize something that must be present to distinguish a major accumulation of oil from the small ones. Over half of all the oil is accumulated under some special set of extremely favorable conditions, and when that set of conditions exists, a lot of oil will accumulate in a comparatively small area. The cost of one dry wildcat will finance a lot of research aimed at finding X, the key to a major oil field."

TABLE 3—MAJOR FIELDS* VS. TOTAL UNITED STATES RESERVES AND PRODUCTION

(In thousands of barrels)

State and field—	Year of first discovery	Est. Ultimate prod.	Remaining reserves 1-1-49	Cumulative prod. to 1-1-49	Prod. 1948	Prod. 1947	Main pays sand (S) or lime (L)	Geologic age of main production
CALIFORNIA:								
Buena Vista	1909	450,000	85,986	364,014	16,610	17,257	S	Plio.
Coalinga, East	1900	330,000	64,344	265,656	6,723	5,738	S	Plio.-Mio.
Coalinga, Nose	1938	370,000	235,005	134,995	19,510	19,265	S	Eocene
Coalinga, West	1900	190,000	26,562	163,438	2,582	2,442	S	Plio.-Mio.
Coles Levee, North	1938	115,000	72,062	42,938	5,489	6,104	S	Mio.
Elk Hills	1919	475,000	275,782	199,218	2,253	2,351	S	Plio.-Mio.
Kern Front	1925	105,000	36,270	68,730	3,264	3,210	S	Plio.
Kern River	1899	350,000	47,663	302,337	4,556	3,731	S	Plio.
Kettleman North Dome	1928	455,000	104,792	350,208	12,887	13,475	S	Mio.-Eocene
McKittrick-Cymric	1887	185,000	72,375	112,625	7,176	7,177	S	Plio.
Midway-Sunset	1901	850,000	113,974	736,026	15,167	15,667	S	Plio.-Mio.
Mount Poso	1926	155,000	69,079	85,921	3,623	4,153	S	Mio.
Rio Bravo	1937	100,000	52,659	47,341	4,441	4,567	S	Mio.
Elwood	1927	110,000	26,992	83,008	2,693	2,576	S	Mio.-Olig.
Orcutt	1903	125,000	17,602	107,398	1,566	1,636	S	Plio.-Mio.
Santa Maria Valley	1934	185,000	93,481	91,519	7,407	9,560	S	Mio.
Ventura Avenue	1916	540,000	184,346	355,654	17,786	17,713	S	Plio.
Brea Olinda	1889	245,000	46,986	198,014	5,326	4,463	S	Plio.-Mio.
Coyote, West	1909	210,000	49,962	160,038	5,607	5,518	S	Plio.
Dominguez	1923	245,000	66,887	178,113	4,910	5,441	S	Plio.-Mio.
Huntington Beach	1920	590,000	172,847	417,153	20,825	18,318	S	Plio.-Mio.
Inglewood	1924	210,000	45,107	164,893	4,416	4,329	S	Plio.-Mio.
Long Beach	1921	825,000	90,316	734,684	8,268	8,605	S	Plio.-Mio.

(Continued on Next Page)

MAJOR FIELDS* VS. TOTAL UNITED STATES RESERVES AND PRODUCTION (Continued)

(In thousands of barrels)

State and field—	Year of first discovery	Est. Ultimate prod.	Remaining reserves 1-1-49	Cumulative prod. to 1-1-49	Prod. 1948	Prod. 1947	Main pays sand (S) or lime (L)	Geologic age of main production
Montebello	1917	175,000	24,014	150,986	2,471	2,699	S	Plio.-Mio.
Richfield	1919	130,000	20,381	109,619	2,271	2,411	S	Plio.
Santa Fe Springs	1919	580,000	57,114	522,886	5,513	5,896	S	Plio.-Mio.
Seal Beach	1926	155,000	41,142	113,858	4,167	4,045	S	Plio.-Mio.
Torrance	1922	155,000	29,615	125,385	2,861	2,942	S	Mio.
Wilmington	1935	800,000	382,775	417,225	48,583	47,698	S	Plio.-Mio.
Subtotal		9,410,000	2,606,120	6,803,880	248,951	248,987		
ROCKY MOUNTAIN AREA:								
Elk Basin (Wyo. and Mont.)	1915	290,000	246,574	43,426	8,168	6,433	S	Pa.
Lance Creek	1918	105,000	24,072	80,928	3,292	3,885	S	Jur.-Pa.
Oregon Basin	1927	100,000	53,524	46,476	3,756	4,009	S-L	Cret.-Pa.
Rangely	1902	310,000	273,342	36,658	13,412	11,606	S	U. Cret.-Pa.
Salt Lake	1906	400,000	68,464	331,536	4,614	4,556	S	Cret.-Jur.-Pa.
Subtotal		1,205,000	665,976	539,024	33,242	30,489		
OKLAHOMA:								
Avant	1904	106,000	7,015	98,985	619	658	S	Pa.
Bowlegs	1926	150,000	20,868	129,132	1,262	1,168	S	Pa.-Sil.-Dev.-Ord.
Burbank	1920	250,000	24,000	226,000	2,432	2,598	S	Pa.
Cement	1917	100,000	48,193	51,807	4,552	4,505	S	Perm.-Pa.
Cushing	1912	420,000	40,346	379,654	2,862	2,834	S-L	Pa.-Ord.
Earlsboro	1924	138,000	6,830	131,170	579	617	S	Pa.-Sil.-Dev.-Ord.
Edmond, West	1943	150,000	67,500	82,500	9,322	14,671	L	Sil.-Dev.-Hunton
Fitts	1933	115,000	8,858	106,142	1,141	1,287	S	Pa.-Sil.-Dev.-Ord.
Glenn Pool	1905	260,000	24,057	235,943	2,610	2,576	S	Pa.-Ord.
Healdton	1913	245,000	36,581	208,419	2,629	2,445	S	Pa.-Ord.
Hewitt and West	1919	125,000	17,956	107,044	1,633	1,661	S	Pa.-Ord.
Little River	1927	140,000	18,201	121,799	1,416	1,425	S	Pa.-Ord.
Oklahoma City	1928	725,000	64,257	660,743	8,543	9,652	S	Pa.-Ord.-Wilcox
Seminole City	1926	150,000	10,728	139,272	1,086	1,258	S	Pa.-Sil.-Dev.-Ord.
Sholem Alechem	1923	100,000	52,732	47,268	4,736	765	S	Pa.
St. Louis	1927	190,000	18,449	171,551	1,330	1,354	S	Pa.-Sil.-Dev.-Ord.
Tonkawa	1921	127,000	2,658	124,342	305	370	S	Pa.-Ord.-Wilcox
Velma	1917	100,000	69,134	30,866	12,486	6,155	S-L	Pa.-Ord.
Subtotal		3,591,000	538,363	3,052,637	59,543	55,999		
KANSAS:								
El Dorado	1916	250,000	51,378	198,622	3,026	2,769	L	Pa.-Ord.
Silica	1931	115,000	32,872	82,128	4,824	5,146	L	Pa.-Ord.
Trapp	1939	180,000	74,325	105,675	10,404	11,333	L	Pa.-Ord.
Subtotal		545,000	158,575	386,425	18,254	19,248		
ARKANSAS:								
Magnolia	1938	110,000	54,892	55,108	4,628	4,638	S-L	Jurassic
Smackover	1922	475,000	56,126	418,874	3,836	3,955	S	Jur.-U. Cret.
Subtotal		585,000	111,018	473,982	8,464	8,593		
LOUISIANA:								
Caddo	1905	205,000	25,811	179,189	3,432	2,319	S	U. and L. Cret.
Delhi-Big Creek	1944	175,000	147,000	28,000	10,483	9,960	S	U. Cret.
Erath	1940	125,000	94,252	30,748	6,252	6,194	S	Ter.-Mio.
Haynesville	1921	125,000	26,810	98,190	4,115	3,156	S-L	U. and L. Cret.
Iowa	1931	100,000	35,214	64,786	2,390	2,491	S	Ter.-Mio.
Jennings	1901	115,000	15,205	99,795	1,527	1,808	S	Ter.-Mio.
Lafitte	1935	120,000	63,233	56,767	4,118	4,360	S	Ter.-Mio.
Rodessa (Tex.-La.-Ark.)	1930	185,000	26,291	158,709	2,775	2,971	L	Cret.
Vinton	1910	110,000	49,673	60,327	3,567	3,645	S	Ter.-Mio.
Subtotal		1,260,000	483,489	776,511	38,659	36,904		
MISSISSIPPI:								
Cranfield	1943	110,000	90,561	19,439	6,836	5,489	S	Cret.
Heidelberg	1944	100,000	81,298	18,702	5,230	5,028	S	Cret.
Tinsley	1939	160,000	52,966	107,034	6,054	6,736	S	Cret.
Subtotal		370,000	224,825	145,175	18,120	17,253		
ILLINOIS:								
Bridgeport	1906	265,000	24,560	240,440	1,905	2,260	S	Pa.
Louden	1937	210,000	66,425	143,575	6,715	7,405	S-L	Miss.-Dev.
Robinson	1906	170,000	14,382	155,618	1,236	1,106	S	Pa.
Salem	1938	250,000	41,920	208,080	4,706	5,245	S-L	Miss.-Dev.
Subtotal		895,000	147,287	747,713	14,562	16,016		
NEW MEXICO:								
Eunice	1928	150,000	58,761	91,239	4,770	4,793	L	Perm.
Hobbs	1928	175,000	51,397	123,603	3,841	3,569	L	Perm.
Monument	1934	185,000	91,143	93,857	6,902	6,544	L	Perm.
Vacuum	1929	130,000	86,320	43,680	4,504	4,102	L	Perm.
Subtotal		640,000	287,621	352,379	20,017	19,008		

(Continued on Next Page)

MAJOR FIELDS* VS. TOTAL UNITED STATES RESERVES AND PRODUCTION (Continued)

(In thousands of barrels)

State and field—	Year of first discovery	Est. Ultimate prod.	Remaining reserves 1-1-49	Cumulative prod. to 1-1-49	Prod. 1948	Prod. 1947	Main pays sand (S) or lime (L)	Geologic age of main production
EASTERN TEXAS:								
East Texas field	1930	5,000,000	2,413,785	2,586,215	111,829	116,947	S	U. Cret.-Woodbine
Hawkins	1940	500,000	403,604	96,396	17,621	17,025	S	U. Cret.-Woodbine
Mexia	1912	107,000	5,694	101,306	417	473	S	U. Cret.-Woodbine
Powell	1923	123,000	4,490	118,510	376	400	S	U. Cret.-Woodbine
Talco	1936	220,000	109,353	110,647	8,795	8,848	L	L. Cret.-Paluxy
Van	1929	450,000	254,536	195,464	12,124	10,451	S	U. Cret.-Woodbine
Subtotal		6,400,000	3,191,462	3,208,538	151,162	154,144		
NORTH TEXAS:								
Burkburnett	1912	185,000	19,993	165,007	1,331	1,135	S	Pa.
K.M.A.	1931	180,000	57,071	122,929	5,439	6,296	S-L	Pa.-Strawn
Electra	1911	200,000	41,351	158,649	2,775	2,609	S	Pa.
Subtotal		565,000	118,415	446,585	9,545	10,040		
SOUTHWEST TEXAS:								
Luling-Branyon	1921	110,000	19,019	90,981	1,478	1,524	L	L. Cret.-Edwards
Darst Creek	1928	105,000	34,217	70,783	2,562	2,521	L	L. Cret.-Edwards
Subtotal		215,000	53,236	161,764	4,040	4,045		
WEST TEXAS:								
Big Lake	1923	125,000	16,087	108,913	1,114	1,173	L	Perm.-Ord.
Cowden, North	1930	225,000	149,519	75,481	8,978	8,883	L	Perm.
Foster	1932	145,000	93,840	51,160	6,980	7,230	L	Perm.
Fullerton	1942	400,000	349,267	50,733	16,011	11,176	L	Perm.-Dev.-Ord.
Goldsmith	1934	400,000	306,792	93,208	11,128	8,800	L	Perm.
Hendrick	1926	230,000	16,499	213,501	1,223	1,287	L	Perm.
Howard-Glasscock	1926	210,000	75,519	134,481	5,581	5,123	L	Perm.
Keystone	1930	420,000	354,399	65,601	14,586	14,738	L	Perm.-Ord.
Levelland	1945	100,000	89,473	10,527	7,637	1,794	L	Perm.
McCamey	1925	125,000	50,636	74,364	3,409	3,350	L	Perm.
McElroy	1926	335,000	149,456	185,544	10,629	10,339	L	Perm.
Seminole	1937	200,000	151,925	48,075	8,124	7,286	L	Perm.
Slaughter	1936	500,000	370,219	129,781	19,184	17,724	L	Perm.
T-X-L	1944	250,000	203,080	46,920	24,089	16,847	L	Perm.-Sil.-Dev.-Ord.
Ward, North, and Estes	1929	120,000	55,574	64,426	3,863	3,723	L	Perm.
Wasson	1936	650,000	471,715	178,285	28,884	26,050	L	Perm.
Yates	1926	800,000	450,126	349,874	18,103	16,550	L	Perm.
Subtotal		5,235,000	3,354,126	1,880,874	189,523	162,073		
PANHANDLE TEXAS:								
Badger	1926	105,000	41,336	63,664	3,565	3,716	L	Perm.
Borger-Pantex	1926	135,000	29,108	105,892	3,044	2,568	L	Perm.
Finley	1926	130,000	48,406	81,594	4,574	4,441	GW	Pa.
West Pampa	1926	130,000	42,126	87,874	3,982	3,619	L	Perm.
Subtotal		500,000	160,976	339,024	15,165	14,344		
TEXAS GULF COAST:								
Agua Dulce to La Gloria	1928	1,350,000	1,181,888	168,112	36,303	32,661	S	Ter.-Olig.
Anahuac	1935	250,000	162,828	87,172	10,758	10,652	S	Ter.-Olig.
Barbers Hill	1916	115,000	27,734	87,266	1,937	1,936	S	Ter.-Alig.-Mio.
Conroe	1931	550,000	280,396	269,604	20,440	21,958	S	Ter.-Eoc.
Greta	1933	115,000	66,022	48,978	4,399	4,004	S	Ter.-Olig.-Mio.
Hastings	1934	450,000	281,094	168,906	21,648	21,288	S	Ter.-Olig.
Hull	1918	125,000	19,942	105,058	1,526	1,280	S	Ter.-E.O.M.
Humble and Light	1904	145,000	12,292	132,708	1,190	760	S	Ter.-E.O.M.
Katy	1938	120,000	96,441	23,559	5,020	5,337	S	Ter.-Eoc.
Magnet-Withers and North	1936	115,000	63,130	51,870	5,869	5,504	S	Ter.-Olig.
Old Ocean	1934	170,000	119,313	50,687	5,954	5,461	S	Ter.-Olig.
Refugio area	1931	100,000	42,573	57,427	3,164	3,025	S	Ter.-Olig.
Sour Lake	1902	100,000	15,094	84,906	1,209	971	S	Ter.-E.O.M.
Spindletop	1901	135,000	6,084	128,916	399	295	S	Ter.-Olig.-Mio.
Thompson	1931	325,000	194,015	130,985	16,958	15,590	S	Ter.-Olig.-Mio.
Tom O'Connor	1934	500,000	365,715	134,285	18,225	17,720	S	Ter.-Olig.
Webster (Friendswood)	1937	380,000	254,362	125,638	20,768	20,994	S	Ter.-Eoc.-Olig.
West Columbia	1902	135,000	29,168	105,832	2,591	2,391	S	Ter.-Olig.-Mio.
West Ranch	1938	185,000	130,687	54,313	6,986	7,042	S	Ter.-Olig.
Subtotal		5,365,000	3,348,778	2,016,222	185,144	178,869		
NEW YORK-PENNSYLVANIA:								
Allegany	1879	170,000	41,718	128,282	3,552	3,490	S	Pa.
Bradford	1871	591,000	75,049	515,951	11,138	11,612	S	Pa.
Subtotal		761,000	116,767	644,233	14,690	15,102		
Total major fields		37,542,000	15,567,034	21,974,966	1,029,081	991,114		
Total U. S. all fields to date		62,045,860	24,834,000	37,211,860	2,051,433	1,896,679		
Major field's share of total		60.5%	62.7%	59.1%	50.2%	52.3%		

*Fields with estimated ultimate production of 100 million barrels or more.

Crude Production Tops 2 Billion Barrels for First Time in 1948

REVIEW AND FORECAST

by Polly De Armond

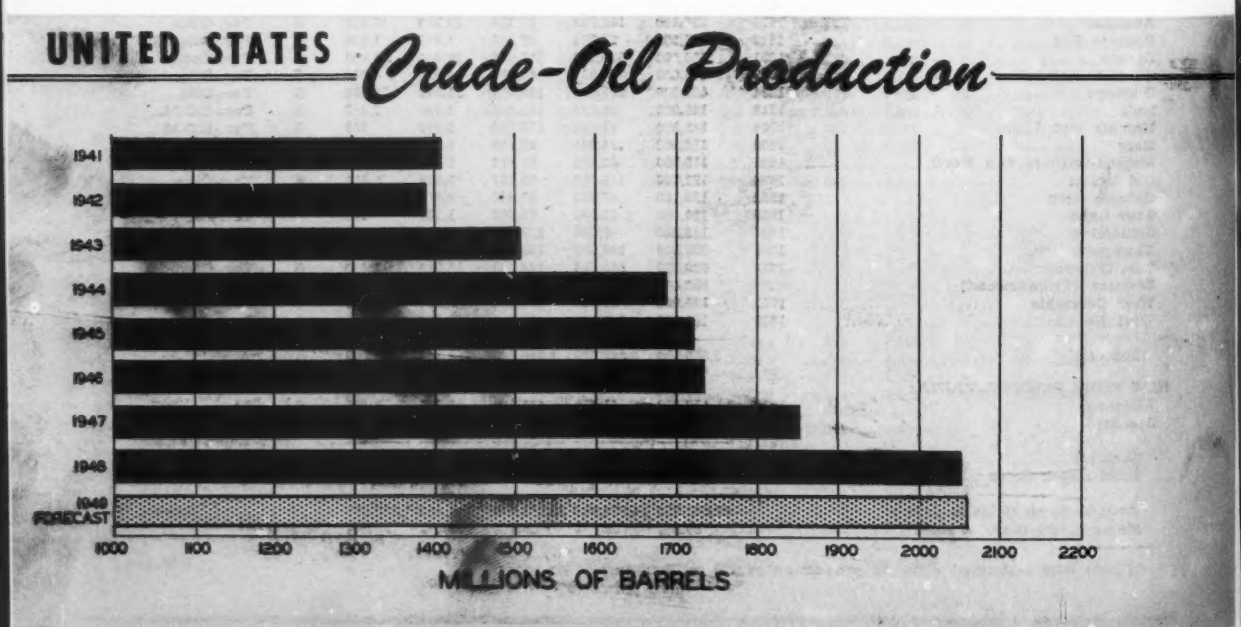
TOTAL United States crude production topped the 2-billion-barrel-per-year mark in 1948 for the first time, and of course broke all previous records. In setting this new mark, the following producing states also established new all-time highs: Alabama, California, Colorado, Florida, Kansas, Louisiana, Mississippi, Montana, New Mexico, Texas, and Wyoming.

There was no change in the order of ranking in the 10 largest producing states. Texas, California, Louisiana, Oklahoma, and Kansas continued to hold the top five places in that order, and with no one of them seriously threatening to pass the next higher ranking state. From sixth through tenth place, the ranking was: Illinois, Wyoming, New Mexico, Mississippi, and Arkansas. In this group, Wyoming is moving ahead rapidly and threatens to displace Illinois as number six. Wyoming cut the 1947 Illinois lead in half during 1948; from slightly over 21 million barrels in 1947 to slightly less than 10 million barrels in 1948. New Mexico still held eighth place, but only by an eyelash over rapidly climbing Mississippi. In 1947, New Mexico was leading by a comfortable margin of over 5 million barrels. In 1948 the lead was less than a half million barrels. There is an excellent chance that 1949 totals may find Mississippi in eighth place, and New Mexico slipping to ninth. Arkansas, in tenth place, has no serious contenders among the states with lower production; at least for a few years.

Various forecasts for next year indicate that United States production will only have to increase a small amount in total, some 2 to 3 per cent, over this year to satisfy the demand predicted. While this demand will be an increase over the average production during 1948, it is perhaps a bit less than the peaks reached in the late stages of 1948.

All of these forecasts are based on a continuation of imports in line with established trends. However, now that supply has caught up with demand, and a surplus, even though small, is in sight, the import problem becames involved in a crossfire of conflicting, and sometimes perplexing interests. It is not a simple conflict of interest between domestic producers and large importing units, although even this is not too clear cut, because most of the large importing units also have very large domestic production interests. National policies involving complicated problems of military security are in the picture. The states and the smaller units of local government have a stake in taxation revenue from domestic production, and from employment or unemployment problems involved. Then other state and local governments in large consuming areas, with little or no oil production, want the lowest possible prices on refined products for their governmental purchases as well as for their citizens.

The drilling program that the industry has outlined (see first article in this special section, on drilling forecast), is a pretty good sign that potential



UNITED STATES PRODUCTION OF CRUDE OIL—BY STATES—1942-1948
(In thousands of barrels per year)

	1948 prod. change	1948	1947	1946	1945	1944	1943	1942	Cum. prod. 1857-1948
Alabama	+ 72	468	396	380	181	54	.....	.....	1,479
Arkansas	+ 1,632	31,622	29,990	28,375	28,613	29,418	27,600	26,628	755,791
California	+ 12,231	345,333	333,102	314,713	326,482	311,793	284,188	248,326	8,001,588
Colorado‡	+ 1,525	17,273	15,748	11,856	4,959	2,944	2,320	2,199	99,846
Florida	+ 33	290	257	68	30	12	.....	.....	657
Illinois	— 2,427	64,032	66,459	75,297	75,210	77,413	82,260	106,391	1,366,769
Indiana	+ 2,155	8,008	5,853	6,726	4,868	5,118	5,283	6,743	180,947
Kansas*	+ 2,386	108,017	105,631	97,560	96,359	99,227	106,839	98,996	1,883,781
Kentucky†	— 415	8,992	9,407	10,590	10,325	9,621	7,909	4,556	233,375
Louisiana	+ 29,681	189,972	160,291	143,669	130,566	129,207	123,592	115,785	2,210,384
Michigan	+ 408	16,623	16,215	17,074	17,259	18,490	20,768	21,754	289,500
Mississippi	+ 12,308	47,325	35,017	24,298	18,775	16,337	18,807	28,833	209,618
Montana	+ 711	9,404	8,693	8,825	8,397	8,627	7,916	8,074	151,191
New Mexico	+ 6,480	47,607	41,127	36,814	37,281	39,555	38,896	31,544	586,143
New York	— 202	4,560	4,762	4,863	4,648	4,697	5,059	5,421	167,450
Ohio	+ 187	3,295	3,108	2,908	2,828	2,937	3,322	3,543	610,442
Oklahoma	+ 13,661	154,680	141,019	134,794	138,036	124,616	123,152	140,690	5,882,571
Pennsylvania	— 50	12,640	12,690	12,996	12,515	14,118	15,757	17,779	1,113,546
Texas	+103,800	923,227	819,427	760,215	755,533	748,122	594,343	483,097	12,221,851
Virginia	— 30	30	60	12	4	3	.....	.....	109
West Virginia	+ 78	2,695	2,617	2,929	2,875	3,067	3,349	3,574	437,985
Wyoming	+ 11,102	55,340	44,238	38,977	35,359	32,388	34,253	32,812	806,837
Total U. S.	+195,326	2,051,433	1,856,107	1,733,939	1,711,103	1,677,764	1,505,613	1,386,645	37,211,860

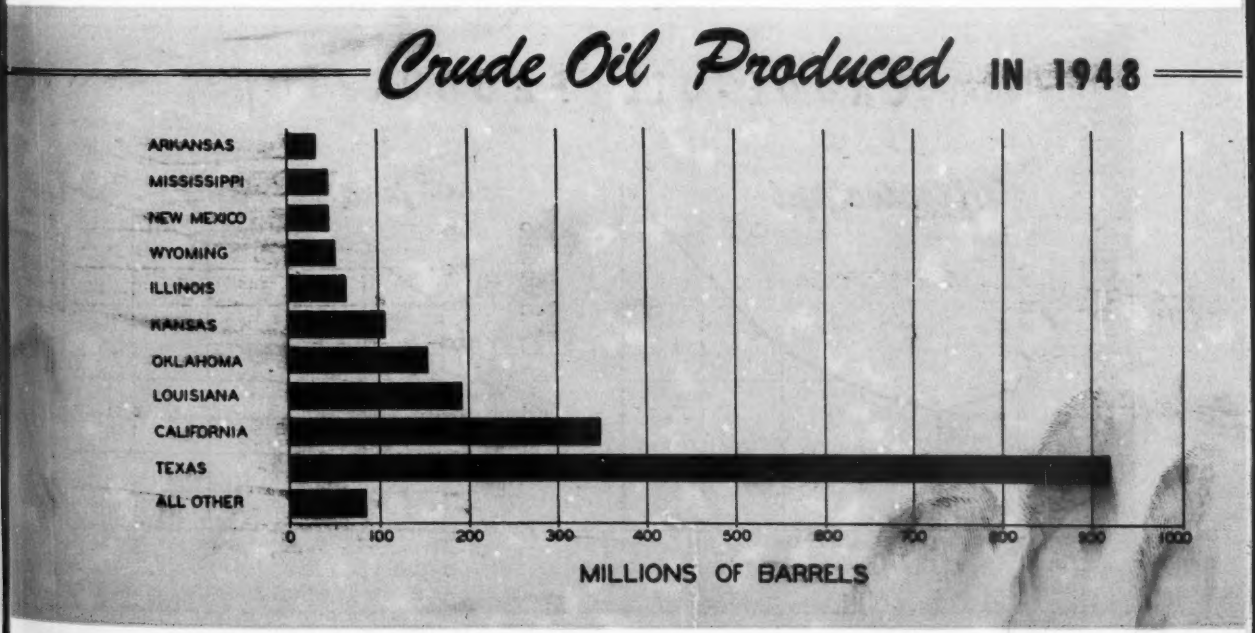
*Includes Nebraska and Missouri. †Includes Tennessee. ‡Includes Utah.

domestic production will be increased in 1949. Unless the price of crude drops substantially while all other commodity prices stay relatively high, this drilling program seems realistic to most producers, and is likely to be realized.

Probably most large producers, many small producers, and the state regulatory bodies would welcome a reasonable excess of potential production over market demand. The word "reasonable" is of course a matter of opinion, but an excess potential that did not depress prices would perhaps suit most producers. It would allow more elbow room in planning shutdowns for workovers, replacement of worn-out equipment, installation of equipment for secondary gas-recovery projects, pressure maintenance, etc.

Among the states, Texas passed the 900-million-barrel-per-year mark for the first time, had the largest increase in barrels over 1948, and in general thoroughly dominated the oil picture throughout the year. There is nothing in sight for 1949 that will affect this dominant position to any noticeable degree.

California held second place in total production



CRUDE-OIL PRODUCTION RECORDS BY STATES
(Thousands of barrels)

	Record year	Production in record year
Alabama	1948	468
Arkansas	1925	77,398
California	1948	345,333
Colorado*	1948	17,273
Florida	1948	290
Illinois	1940	147,647
Indiana	1904	11,339
Kansas†	1948	108,017
Kentucky‡	1946	10,590
Louisiana	1948	189,972
Michigan	1939	23,462
Mississippi	1948	47,325
Montana	1948	9,404
New Mexico	1948	47,607
New York	1882	6,685
Ohio	1896	23,941
Oklahoma	1927	277,775
Pennsylvania	1891	31,424
Texas	1948	923,227
Virginia	1947	60
West Virginia	1900	16,196
Wyoming	1948	55,340

*Includes Utah. †Includes Nebraska and Missouri. ‡Includes Tennessee.

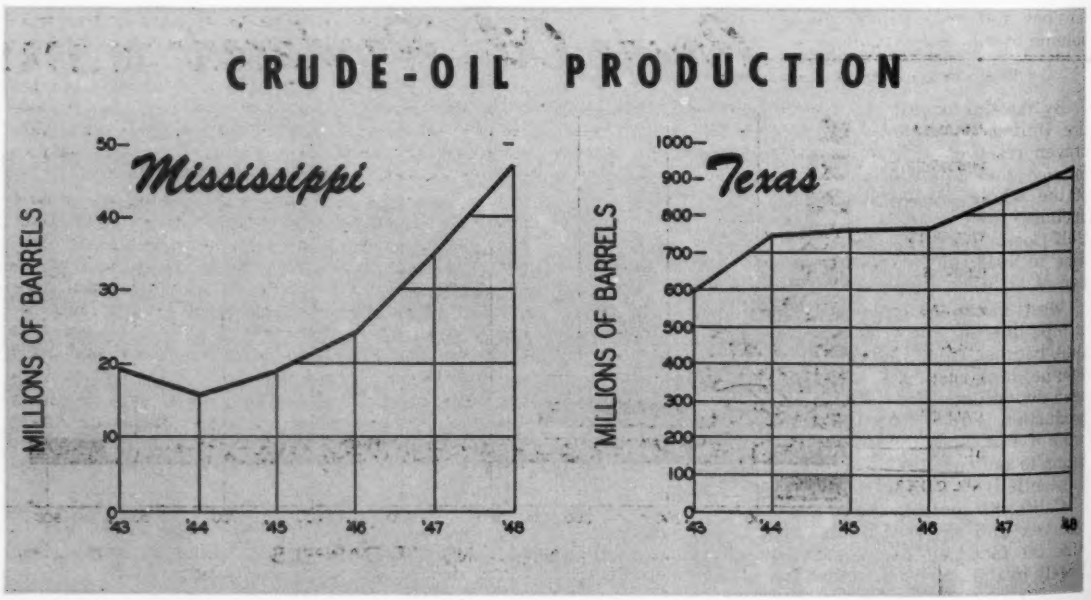
UNITED STATES PRODUCTION—DAILY AVERAGE PER WELL

	1948 (thou. bbl.)	Producing wells 1-1-49	Daily avg. bbl. per well
Alabama	468	34	37.6
Arkansas	31,622	3,478	24.8
California	345,333	28,965	32.6
Colorado	17,270	739	63.9
Florida	290	7	113.1
Illinois	64,032	30,355	5.8
Indiana	8,008	3,107	7.0
Kansas	107,813	28,321	10.4
Kentucky	8,983	14,510	1.7
Louisiana	189,972	9,356	55.5
Michigan	16,623	3,427	13.3
Mississippi	47,325	1,328	97.4
Montana	9,404	2,891	8.9
New Mexico	47,607	5,033	25.8
New York	4,560	17,684	0.7
Ohio	3,295	22,591	0.4
Oklahoma	154,680	53,706	7.9
Pennsylvania	12,640	56,484	0.6
Texas	923,227	109,712	23.0
West Virginia	2,695	16,636	0.4
Wyoming	55,340	4,612	32.8
Miscellaneous	246	168	4.0
Total U. S.	2,051,433	413,144	13.6

by a wide margin over Louisiana, but when it comes to the amount of increase in barrels over 1947, California was in fifth place. Louisiana, the third largest producing state, was second in amount of increase over 1947, with nearly 30 million barrels. Oklahoma, fourth in total production, was third in amount of increase over 1947, with nearly 14 million barrels more. Even fast climbing Mississippi, still ninth in total production but coming up fast, exceeded California's increase over 1947 production. It was close; 12,308,000 bbl. increase for Mississippi against 12,231,000 bbl. increase for California.

Illinois, sixth in total production in 1948, continued its steady decline from the 1940 peak, although at a slower rate than during the preceding year. Wyoming, although seventh in total production in 1948, was on the upgrade, and its increase of 11 million barrels was good for sixth place in amount of increase. New Mexico, eighth in total production, was good enough to take seventh place in the matter of increase over 1947, with over 6 million barrels more production in 1948.

Kansas was fifth in total production in 1948, but could do no better than eighth place in rank in increases, with only a bit more than 2 million barrels increase over 1947. Ninth place in the increase rank was claimed by Indiana, which also had a jump of slightly more than 2 million barrels over 1947. In total production, Indiana ranked fifteenth, but this relatively big increase put it in position to challenge and perhaps pass Kentucky in 1949 to take fourteenth place in total production.



PROVEN RESERVES

Proven Reserves Increase Despite Record-Breaking Withdrawals

REVIEW AND FORECAST

by Charles J. Deegan

PROVEN reserves of all petroleum hydrocarbons as of January 1, 1949, showed a slight but significant increase over January 1, 1948, despite all-time record-breaking withdrawals from the underground reservoirs. (See Table 1.) Reserves in the three main groups increased. Crude-plus-condensate, the most important group, increased by slightly over a billion barrels. (See Tables 2 and 3.) Other natural-gas liquids increased 244 million barrels, or about 11 per cent. (See columns 3 and 4, Table 2.) These two groups combined, representing the total of all liquid hydrocarbons, increased 1,341,000,000 bbl. (See last column, Table 2.) Natural-gas reserves, the last of the three groups, increased 908 billion cubic feet. (See Table 4.)

Texas completely overshadows all other states in all three groups. In crude-plus-condensate, Texas has three times as much reserve as the next largest state, California. In other natural-gas liquids, Texas maintains a better than three-to-one ratio over Louisiana, the second ranking in this group. In dry-natural-gas reserves, Texas has almost four times as much reserve as Louisiana, which is also second in this group.

In Table 3, a detailed analysis is shown of the large crude-plus-condensate reserves classification, by states and by subdivisions of Texas, California, and Louisiana. While Texas as a whole showed a substantial increase, two subdivisions of the state showed decreases. In the Panhandle, extensions and revisions of previous fields failed to quite equal production. In Eastern Texas, new discoveries, plus extensions and revisions, failed to overcome the large volume of oil taken from "East Texas field."

West Texas Shows Largest Increase

By far the largest increase in reserves in the entire United States took place in West Texas. The proven reserves of that area now exceed the total for any other single state, and represent 18.5 per cent of the whole United States proven reserves. Production in West Texas surpassed that of the Texas Gulf Coast (Railroad Districts 2 and 3) for the first time in 1948, and exceeded the state total production of all other states except California.

West Texas is temporarily handicapped by lack of pipe-line outlets. This will be more noticeable in 1949, because since the end of the oil shortage, large volume, high-cost tank-car shipments of crude have been dwindling. The ratio of proven reserves to 1948 production is 16.8. This compares with a total Texas ratio of 15.3, and a United States ratio of 12.1. This seems to indicate that production could be increased substantially from presently proven reserves.

California continues to hold second place in proven reserves, and showed a fair increase this year, despite the fact that the Cuyama-Salinas trend is still largely in the potential, rather than the proven stage, so far as large figures are concerned.

TABLE 1—PROVEN RESERVES OF TOTAL LIQUID HYDROCARBONS AND DRY NATURAL GAS IN UNITED STATES
(Millions of barrels and Billion cubic feet)

	Jan. 1, 1949	Jan. 1, 1948	Change
Crude oil, condensate, and other natural-gas liquids	27,325	25,984	+1,341
Dry natural gas	175,187	174,279	+ 908

Louisiana still holds third place and an edge on Oklahoma in fourth place, despite the rapid proving of big potentialities in southwestern Oklahoma. Southern Louisiana is stepping up both its production and proven reserves. Northern Louisiana increased its production more rapidly than its reserves during the past year.

Wyoming, in fifth place, shows a slight decrease. This is not due to any diminishing of that state's potential promise. It is primarily due to transfer of a substantial amount of reserves to the "potentially proven" classification, and out of the "proven" group.

The following states show decreases besides Wyoming: Colorado, Pennsylvania, New York, Kentucky, and West Virginia. Colorado's decrease was entirely due to failure to develop new proven reserves fast enough to overcome the withdrawal from Rangely field. Potentially the state is still in the very promising stage. Pennsylvania and New York decreases are mostly due to failure to develop enough additional reserves to take the place of withdrawals from Allegany and Bradford fields. Western Kentucky developments were not sufficient to balance total production withdrawals in that state.

Gas reserves increased slightly, despite record production from dry-gas fields and increased withdrawals from reservoirs in which the gas is associated with oil. Texas accounted for the bulk of the gain, with 700 billion cubic feet added. California, with no substantial reserves added, and a local demand that was still unsatisfied after bringing in large amounts of gas from West Texas and New Mexico, showed a decrease of 350 billion cubic feet.

Additional gas lines from Texas and southeast New Mexico, plus lines projected from northwest New Mexico, when completed in the next 2 to 3 years, should ease the drain on California's gas reserves.

New Mexico, Oklahoma, and Kansas were the other states adding over 100 billion cubic feet to reserves during 1948. In the older producing eastern states, the trend was generally downward.

In Table 5, the ratio of reserves to production of

Table 2—Changes in Total Liquid Reserves by States, 1949 vs. 1948

(Millions of barrels)

	Reserves crude plus condensate 1-1-48	Reserves crude plus condensate 1-1-49	Reserves other nat. gas liquids 1-1-48	Reserves other nat. gas liquids 1-1-49	Reserves total liquid hydrocarbons 1-1-48	Reserves total liquid hydrocarbons 1-1-49	Changes in total liquid reserves
Texas	13,465	14,094	1,300	1,500	14,765	15,594	+ 829
California	3,476	3,581	200	210	3,676	3,791	+ 115
Louisiana	1,910	2,050	345	350	2,255	2,400	+ 145
Oklahoma	995	1,116	90	100	1,085	1,216	+ 131
Wyoming	770	745	30	31	800	776	— 24
Kansas-Nebraska-Missouri	625	653	70	73	695	726	+ 31
New Mexico	540	576	80	86	620	662	+ 42
Mississippi	490	495	60	65	550	560	+ 10
Illinois	375	402	1	2	376	404	+ 28
Colorado-Utah	320	317	2	5	322	322	....
Arkansas	260	300	19	21	279	321	+ 42
Pennsylvania	125	107	2	2	127	109	— 18
Michigan	90	93	1	1	91	94	+ 3
Montana	83	90	8	8	91	98	+ 7
Indiana	41	57	1	2	42	59	+ 17
New York	61	51	0	0	61	51	— 10
Kentucky-Tennessee	44	40	17	15	61	55	— 6
West Virginia-Virginia	34	33	19	18	53	51	— 2
Ohio	29	30	2	2	31	32	+ 1
Alabama	2	2	0	0	2	2	....
Florida	2	2	0	0	2	2	....
Total United States	23,737	24,834	2,247	2,491	25,984	27,325	+1,341

Table 3—Proven Crude-Oil and Condensate Reserves, January 1, 1949

(In thousands of barrels)

State	Estimated reserves as of 1-1-48	1948 discoveries	Extensions and revisions	Total	Less 1948 production	Estimated reserve as of 1-1-49	Change from 1-1-48	Per cent U.S. total
Texas total	13,465,000	67,180	1,485,077	15,017,257	923,257	14,094,000	+ 629,000	56.8
Panhandle	340,000	0	28,687	368,687	31,687	337,000	— 3,000	1.4
West	4,112,000	18,560	738,722	4,869,282	274,282	4,595,000	+ 483,000	18.5
North	460,000	14,340	112,656	586,996	69,996	517,000	+ 57,000	2.1
Eastern	3,580,000	8,200	53,206	3,641,406	177,406	3,464,000	— 116,000	14.0
Southwest	1,868,000	13,030	171,860	2,052,890	108,890	1,944,000	+ 76,000	7.8
Gulf Coast	3,105,000	13,050	379,946	3,497,996	260,996	3,237,000	+ 132,000	13.0
California total	3,476,000	27,750	422,583	3,926,333	345,333	3,581,000	+ 105,000	14.4
Los Angeles	1,114,000	1,675	160,892	1,276,567	125,567	1,151,000	+ 37,000	4.6
Coastal	599,000	2,525	68,611	670,136	59,136	611,000	+ 12,000	2.5
San Joaquin	1,763,000	23,550	193,080	1,979,630	160,630	1,819,000	+ 56,000	7.3
Louisiana total	1,910,000	15,550	314,422	2,239,972	189,972	2,050,000	+ 140,000	8.3
Northern	400,000	2,160	85,552	487,712	47,712	440,000	+ 40,000	1.8
Southern	1,510,000	13,390	228,870	1,752,260	142,260	1,610,000	+ 100,000	6.5
Oklahoma	995,000	17,210	258,470	1,270,680	154,680	1,116,000	+ 121,000	4.5
Wyoming	770,000	19,270	11,070	800,340	55,340	745,000	— 25,000	3.0
Kans.-Neb.-Mo.	625,000	29,300	106,717	761,017	108,017	653,000	+ 28,000	2.6
New Mexico	540,000	1,700	81,907	623,607	47,607	576,000	+ 36,000	2.3
Mississippi	490,000	1,250	51,075	542,325	47,325	495,000	+ 5,000	2.0
Illinois	375,000	7,890	83,142	466,032	64,032	402,000	+ 27,000	1.6
Colorado-Utah	320,000	3,100	11,173	334,273	17,273	317,000	— 3,000	1.3
Arkansas	260,000	1,400	70,222	331,622	31,622	300,000	+ 40,000	1.2
Pennsylvania	125,000	0	—5,360	119,640	12,640	107,000	— 18,000	0.4
Michigan	90,000	6,450	13,173	109,623	16,623	93,000	+ 3,000	0.4
Montana	83,000	4,310	12,094	99,404	9,404	90,000	+ 7,000	0.4
Indiana	41,000	5,260	18,748	65,008	8,008	57,000	+ 16,000	0.2
New York	61,000	0	—5,440	55,560	4,560	51,000	— 10,000	0.2
Kentucky-Tenn.	44,000	1,600	3,392	48,992	8,992	40,000	— 4,000	0.2
W. Virginia-Va.	34,000	0	1,725	35,725	2,725	33,000	— 1,000	0.1
Ohio	29,000	0	4,295	33,295	3,295	30,000	+ 1,000	0.1
Alabama	2,000	0	468	2,468	468	2,000	....	....
Florida	2,000	0	290	2,290	290	2,000	....	....
Total U. S.	23,737,000	209,220	2,939,243	26,885,463	2,051,463	24,834,000	+1,097,000	100.0

TABLE 4—UNITED STATES NATURAL GAS RESERVES—JAN. 1, 1949 VS. JAN. 1, 1948
(Billion cubic feet at 60° ft. and 14.65 psia.)

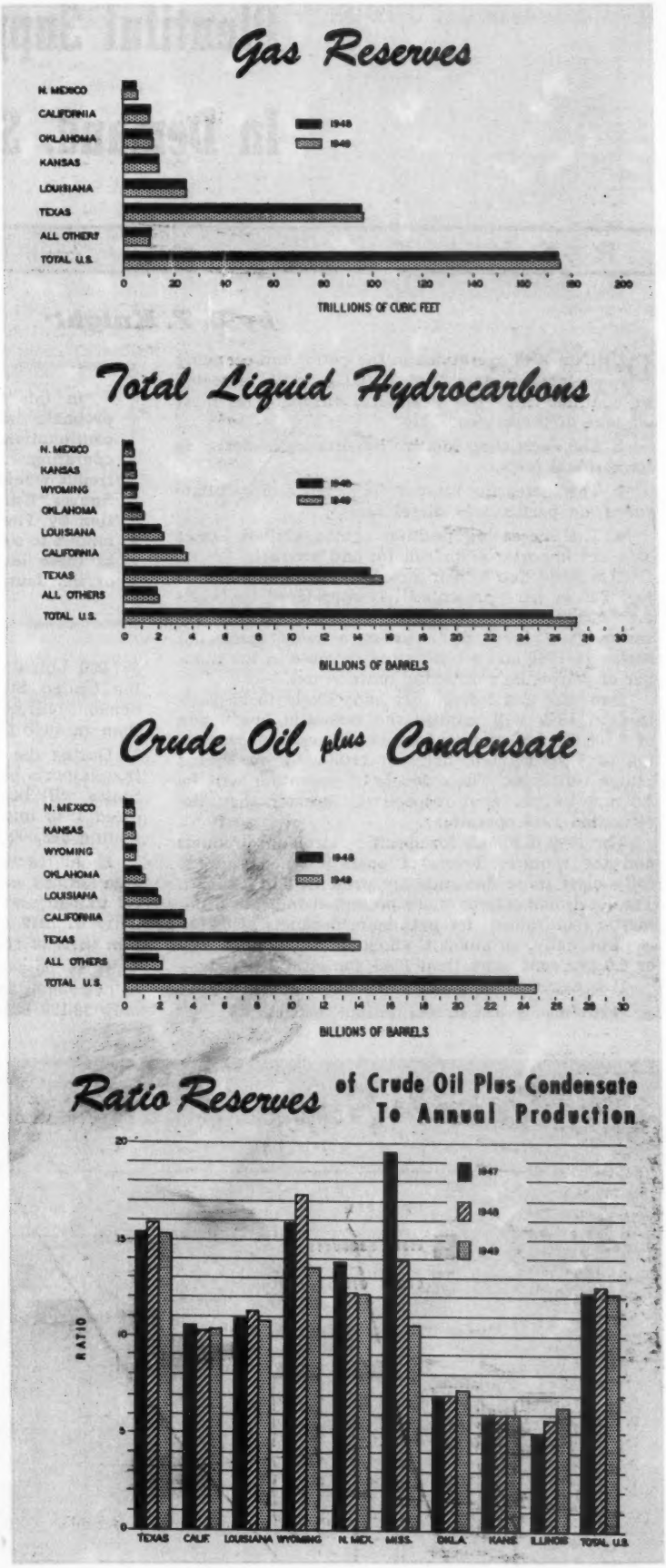
	Natural gas reserves		
	1-1-48	1-1-49	Changes
Texas	95,500	96,200	+700
California	10,700	10,350	—350
Louisiana	25,300	25,350	+ 50
Oklahoma	11,700	11,880	+180
Wyoming	1,500	1,530	+ 30
Kansas	14,100	14,205	+105
New Mexico	6,200	6,500	+300
Mississippi	2,400	2,420	+ 20
Illinois	260	240	— 20
Colo.-Utah	320	350	+ 30
Arkansas	875	860	— 15
Pennsylvania	490	475	— 15
Michigan	140	150	+ 10
Montana	850	810	— 40
Indiana	17	17	...
New York	62	60	— 2
Ky.-Tenn.	1,350	1,340	— 10
W. Va.-Va.	1,900	1,840	— 60
Ohio	615	610	— 5
Total U. S.	174,279	175,187	+908

TABLE 5—RATIO OF RESERVES TO PRODUCTION
(Crude Plus Condensate)

	Jan. 1, 1949	Jan. 1, 1948	Jan. 1, 1947
Texas	15.3	15.9	15.4
California	10.4	10.3	10.6
Louisiana	10.8	11.3	10.9
Oklahoma	7.2	7.0	6.9
Wyoming	13.5	17.3	15.9
Kansas	6.0	6.0	6.0
New Mexico	12.1	13.2	13.8
Mississippi	10.5	13.9	19.5
Illinois	6.3	5.7	5.0
Colorado	18.4	20.5	23.5
Arkansas	9.5	8.7	10.0
Pennsylvania	8.5	9.8	10.5
Michigan	5.6	5.6	4.0
Montana	9.6	9.5	10.5
Indiana	7.1	6.4	5.1
New York	11.2	12.8	12.3
Ky.-Tenn.	4.4	4.6	4.2
W. Va.-Va.	12.1	12.8	12.1
Ohio	9.1	9.4	8.2
Total U. S.	12.1	12.5	12.2

crude and condensate reveals some interesting items. In this table the states are ranked in the same order as the relative size of their proven reserves. This ratio of reserves to production seems to be a mixture of economics and physical ability of the oil reservoirs to yield their oil at any given rate. In the older areas, where little new production is found, the ratio is not likely to change much. This does not apply to water-flood areas, where price and market demand can change the picture substantially over an average 3-year period, by expanding or contracting activity in developing new flood properties.

Texas with a 15.9 reserve to production ratio at the beginning of 1948, bore the brunt of expanded production during 1949 to meet consumers demands. Development of new discoveries did not quite keep pace with the increase in production, so the ratio dropped slightly to 15.3. California did a shade better than holding its own, by developing additional reserves to meet the increased production, and increase its ratio from 10.3 to 10.4.



VOLUMETRIC OUTLOOK

Plentiful Supply, Leveling Off In Demand, Seen for 1949

REVIEW AND FORECAST

*by E. T. Knight**

DURING 1948 operations in the petroleum economy evidenced certain trends that may be expected to continue into the near-term future. The most obvious of these trends are:

1. The decreasing relative importance of demands for residual fuels.

2. The increasing relative importance of distillate fuels and particularly diesel fuels.

3. The increasing position of the United States as a net importer of petroleum and products.

The projection of demands for petroleum products for 1949 as here presented has considered the various factors affecting these demands, particularly assuming a level of business activity somewhat higher in 1948 and a continuing increase in the number of petroleum consuming units in use.

Domestic and foreign demands likely to be realized in 1949 will require the domestic production of 5,705,000 bbl. daily of crude oil and the processing of 5,809,000 bbl. daily of crude oil by United States refineries. These levels of operation will be 3.6 and 5.0 per cent respectively greater than the estimated 1948 operations.

The 1949 demands for specific petroleum products and the required levels of operation necessary to fully meet those demands are presented in Table 1. The total demands as there presented indicate a domestic requirement for petroleum products of 6,213,000 bbl. daily, an amount which is 351,000 bbl. daily or 6.0 per cent more than 1948 domestic demands.

It is expected that foreign consumers will require 387,000 bbl. daily of petroleum and products from the United States industry in 1949. That level of demand will be 9,000 bbl. daily or 2.4 per cent more than in 1948 foreign demand.

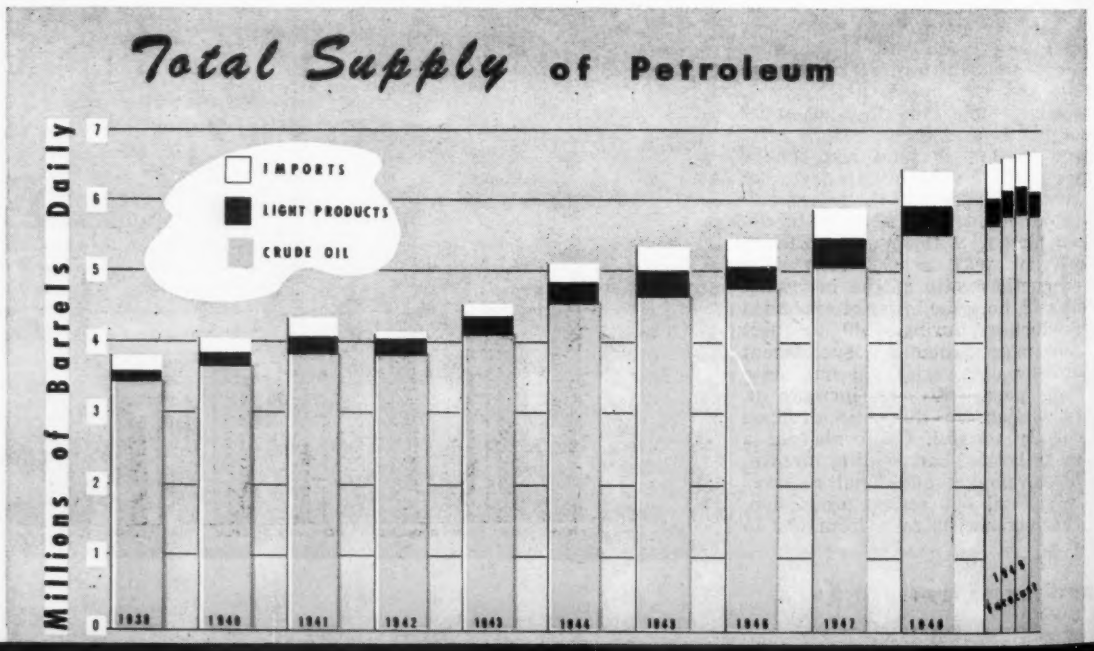
During the coming year, however, it is expected that imports of crude and products into the United States will be 8.3 per cent greater than the indicated 1948 imports and will reach a level approximating 543,000 bbl. daily.

If this exchange of petroleum products with foreign nations as forecast is realized, the United States oil industry will be a net importer of 156,000 bbl. daily in 1949 as compared with a net import position in 1948 of 123,000 bbl. daily.

It is here considered that the level of stocks of petroleum and products will increase at a rate of only 58,120 bbl. daily in 1949, an amount estimated

In this forecast the author's estimates of probable imports during 1949 are based on continuation of economic trends that are now operating. Any substantial change in these trends would have some effect on these import figures. Knight's estimates, and their publication by The Oil and Gas Journal, are not intended to signify either approval or disapproval of these import trends, by either the author or the Journal.

*Petroleum economist, The Atlantic Refining Co.



as necessary for efficient operation of the industry's economy at the higher level of demands.

Demands to be supplied and operations necessary to meet these demands during 1949 are presented by quarterly periods in Table 2. Discussions of the basic factors employed in forecasting demands for specific products follow:

Motor Fuel

A total demand for motor fuel of 2,660,000 bbl. daily is forecast for 1949. That level of total demand will be 6.7 per cent greater than the 1948 demand. Of this amount, 2,548,000 bbl. daily will be required by domestic consumers. It is expected that 1949 domestic requirements will be 6.8 per cent greater than those recorded during 1948.

The forecast of demand for motor fuel as here presented was made under the assumption that the number of operating units—passenger cars, trucks, and buses—would increase as indicated in Table 3.

Some data are now available which offer an opportunity to consider the demands for fuel created by the operation of trucks and buses powered by diesel engines. Because of the inadequacy of these data, the levels of demands for diesel fuel by those units, as shown in Table 4, are presented as no more than approximations.

Demands for motor fuel by categories of consumers are indicated in Table 5.

Middle Distillates

It is here forecast that the combined domestic and export demands for middle distillates (kerosine, distillates, and diesel fuels) in 1949 will be 10.5 per cent greater than the 1948 comparable demands and will reach a level of 1,488,000 bbl. daily.

The 1949 domestic demands for these products will be 1,410,000 bbl. daily and will be approximately 10.8 per cent greater than the indicated 1948 domestic demands. The change in relative importance of distillate fuels in the domestic market is indicated in Table 6. It is expected that during 1949 the domestic demands for middle distillates will be equal to 22.7 per cent of total consumption as compared to a 21.7 per cent position in 1948 and a 20.1 per cent position in 1947.

Table 7 indicates the historic, current, and projected demands for middle distillates by classes of consumers.

The use of distillate fuels for heating homes is

TABLE 1—DEMAND AND SUPPLY OF PETROLEUM PRODUCTS
(Barrels daily)

	1948* Quantity	1948* Per cent increase over 1947	1949 forecast Quantity	1949 forecast Per cent increase over 1948
Motor fuel	2,492,900	8.0	2,659,520	6.7
Domestic	2,386,600	9.8	2,548,220	6.8
Export	106,300	—18.4	111,300	4.7
Kerosine	325,560	8.3	348,410	6.4
Domestic	315,090	12.2	334,910	6.3
Export	10,470	—47.4	11,500	9.8
Distillate fuel	1,021,440	13.6	1,141,100	11.7
Domestic	957,770	17.2	1,074,820	12.2
Export	63,670	—22.4	66,280	4.1
Residual fuel	1,442,590	—0.5	1,460,280	1.2
Domestic	1,409,740	—0.7	1,429,000	1.4
Export	32,850	11.6	31,280	—4.8
Lubricants	137,300	—1.3	144,830	5.5
Domestic	99,980	—0.1	106,330	6.4
Export	37,320	—4.3	38,500	3.2
Wax	9,490	—3.4	10,500	10.6
Domestic	6,590	—2.9	7,500	13.8
Export	2,900	—4.3	3,000	3.4
Asphalt and road oil, domestic	162,150	2.2	169,700	4.7
L.P.G. domestic (including L.R.G.)	177,230	22.8	195,900	10.5
Miscellaneous products and losses	295,870	...	293,750	—0.8
Domestic	279,150	—2.8	275,000	—1.5
Export	16,820	—18.4	18,750	11.5
Crude oil	174,680	—9.8	177,600	1.7
Domestic (as such and losses)	67,090	0.2	71,300	6.3
Export	107,590	—14.8	106,300	—1.2
Demand for all oils	6,239,310	5.8	6,599,590	5.8
Domestic	5,861,390	7.6	6,212,680	6.0
Export	377,920	—16.1	386,910	2.4
Stock changes:				
Crude	+39,630	...	+18,600	...
Products	+105,470	...	+39,520	...
Total new supply	6,404,410	6.8	6,657,710	4.0
Imports	501,020	14.6	542,550	8.3
Crude	337,570	26.3	373,840	10.7
Products	163,450	—3.9	168,710	3.2
Domestic supply	5,903,390	6.0	6,115,160	3.6
Natural gasoline, etc.	394,350	8.8	409,760	3.9
Crude-oil production	5,509,040	8.3	5,705,400	3.6
Crude-oil run to stills	5,535,140	9.1	5,803,300	5.0

*Fourth quarter estimated.

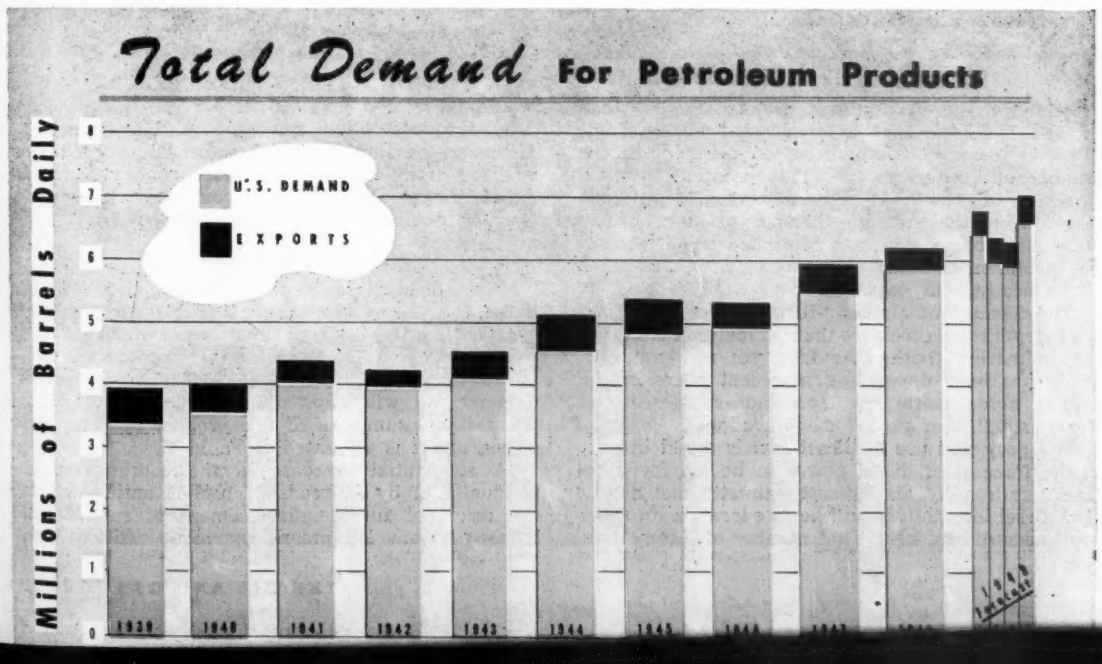


TABLE 2—DEMAND AND SUPPLY OF PETROLEUM PRODUCTS 1949 QUARTERLY FORECAST
(Barrels daily)

	1st quarter		2nd quarter		3rd quarter		4th quarter	
	Quantity	Per cent increase over 1948	Quantity	Per cent increase over 1948	Quantity	Per cent increase over 1948	Quantity	Per cent increase over 1948*
Motor fuel	2,266,000	7.0	2,808,500	7.3	2,915,400	7.8	2,641,200	4.4
Domestic	2,166,000	6.0	2,693,500	7.8	2,795,400	8.1	2,531,200	4.8
Export	100,000	36.6	115,000	—2.0	120,000	0.5	110,000	—4.3
Kerosine	485,000	9.3	249,000	5.0	230,000	4.7	423,600	5.4
Domestic	475,000	8.9	237,000	4.5	218,000	4.9	411,600	5.5
Export	10,000	31.4	12,000	15.8	12,000	1.8	12,000	0.0
Distillate fuel	1,486,000	13.9	906,000	8.7	786,300	11.7	1,380,910	11.7
Domestic	1,438,000	14.3	836,000	9.9	711,300	11.4	1,318,910	12.2
Export	58,000	4.7	70,000	—3.9	75,000	23.0	62,000	1.6
Residual fuel	1,605,000	1.3	1,385,000	0.8	1,290,000	2.5	1,563,430	0.5
Domestic	1,580,000	1.1	1,350,000	1.0	1,255,000	3.3	1,533,430	0.6
Export	25,000	19.6	35,000	—6.2	35,000	—18.8	30,000	0.0
Lubricants	143,010	3.6	146,500	5.2	143,950	11.5	145,840	2.1
Domestic	104,510	1.9	108,000	8.5	105,450	12.8	107,340	2.9
Export	38,500	8.4	38,500	—2.9	38,500	8.1	38,500	0.0
Wax	10,500	—4.4	10,500	10.6	10,000	36.1	11,000	7.8
Domestic	7,500	—4.0	7,500	14.5	7,000	39.2	8,000	14.3
Export	3,000	—5.4	3,000	2.0	3,000	29.3	3,000	—6.2
Asphalt and road oil, domestic	94,810	4.1	169,900	3.0	256,500	5.3	156,040	5.2
L.P.G. domestic (including L.R.G.)	210,000	11.8	175,000	10.2	180,000	9.7	218,670	10.4
Miscellaneous and losses	288,500	1.3	299,000	—1.5	299,000	—0.8	288,500	—1.9
Domestic	270,000	0.7	280,000	—3.0	280,000	—1.7	270,000	—1.8
Export	18,500	11.3	19,000	26.0	19,000	14.9	18,500	—2.4
Crude oil	155,000	6.0	190,000	2.9	190,000	—3.9	175,000	2.9
Domestic (as such and loss)	60,000	20.0	75,000	5.3	75,000	—2.6	75,000	7.1
Export	95,000	—1.3	115,000	1.4	115,000	—4.7	100,000	0.0
Demand for all oils	6,753,820	6.9	6,339,400	5.3	6,301,150	6.2	7,004,190	4.8
Domestic	6,405,820	6.6	5,931,900	5.7	5,883,650	6.7	6,630,190	5.1
Export	348,000	12.7	407,500	—0.3	417,500	0.6	374,000	—1.2
Stock changes:								
Crude	+40,000	...	+32,500	...	+22,500	...	—20,000	...
Products	—218,820	...	+283,100	...	+375,350	...	—284,990	...
Total new supply	6,575,000	5.8	6,655,000	4.4	6,699,000	4.5	6,700,000	1.3
Imports	545,000	10.7	520,000	9.0	540,000	5.2	565,000	4.9
Crude	360,000	28.7	370,000	13.0	380,000	3.5	385,000	5.5
Products	185,000	—5.1	150,000	0.5	160,000	9.7	180,000	2.9
Domestic supply	6,030,000	5.1	6,135,000	4.0	6,159,000	4.4	6,135,000	1.0
Crude production	5,620,000	5.1	5,730,000	4.0	5,750,000	4.3	5,720,000	1.0
Other supply:								
Natural gasoline, etc.	409,100	4.5	404,100	4.3	408,100	5.8	414,100	2.5
Benzol	900	—22.4	900	—3.2	900	—1.0	900	0.0
Crude run to stills	5,710,000	6.3	5,805,000	3.4	5,845,000	5.4	5,875,000	4.7

*Fourth quarter 1948 estimated.

projected to be 11 per cent greater in 1949 than in 1948. The basis for this forecast is found in Table 8 which indicates a growth of 13 per cent in the number of burners in use. The variation in these two rates of growth, 11 per cent versus 13 per cent, results from the greater efficiency of new burners to be installed as well as a continued trend towards the insulation of many more homes now consuming oil for heating purposes.

The forecast of distillate-fuel demand for home-heating purposes considers that competition from the gas industries (both manufactured and natural), which has been developing in recent years in the field of home heating, will continue to increase as greater supplies of gas are made available.

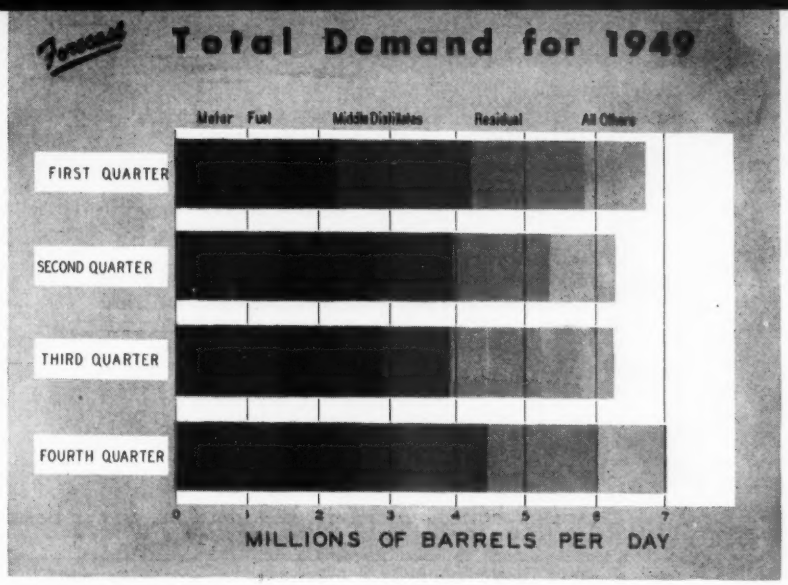
The projected use of diesel fuel is based in part on the forecast of diesel power to be employed by Class 1 railroads. This forecast estimates that nearly 9,800 diesel locomotives will be in operation on Class 1 railroads during 1949. That number of locomotives would be nearly equal to 25 per cent of the total number of locomotives employed by Class 1 railroads. However, because of the greater efficiency to be realized from the use of diesel equipment, it is expected that this type of locomotive will provide over 60 per cent of all locomotive power.

Residual Fuel

Total demand for residual fuel of 1,460,000 bbl. daily as forecast for 1949 will be 1.2 per cent greater than the 1948 indicated consumption.

Domestic requirements for this product are projected to be 1.4 per cent above the 1948 level of demand and will approximate 1,429,000 bbl. daily. Domestic consumption of this product by categories of consumers is presented in Table 10.

A substantial decrease in the consumption of residual fuel by railroads in 1949 is anticipated as the result of further displacement of residual oil burning steam equipment by more efficient and



economical diesel locomotives. It has been indicated that the work performed by 5 bbl. of residual fuel in steam locomotives can now be accomplished by 1 bbl. of diesel fuel.

The decreasing trend in relative importance of residual-fuel demand established during recent years is expected to continue into 1949, and a new low point in the relationship of volume consumed to total domestic demand is expected.

It is here projected that domestic demand for residual fuel in 1949 will be equal to only 23 per cent of total domestic demand, having been 24.0 per cent in 1948, 26.1 per cent in 1947, and an average of 27.3 per cent during the 10 years preceding the war.

The loss in position of residual-fuel demand from 1948 to 1949 will be equal to 66,000 bbl. daily. The decreasing position of residual-fuel demands may be expected to continue, and the refinery branch of the industry will be required to reduce accordingly the yield of this fuel from crude oil processed.

TABLE 3—PASSENGER CARS IN UNITED STATES
(In thousands)

	Registration end of year	Factory sales domestic market	Units scrapped	Vehicles exempt from registration end of year	Average in use
1941	29,240	3,682	1,678	106	28,344
1945	25,399	68	*—33	152	25,498
1946	27,835	2,004	*—437	166	26,776
1947	30,669	3,297	*452	185	29,428
1948†	33,200	3,831	1,285	200	31,977
1949	35,500	3,900	1,600	200	34,550
Trucks and Buses					
1941	4,741	164	266	279	5,071
1945	5,025	254	*—61	245	5,065
1946	5,859	752	*42	260	5,694
1947	6,658	998	*350	296	6,537
1948†	7,078	1,027	583	320	7,176
1949	7,254	820	640	330	7,491

*Considers the surplus vehicles that entered the domestic market and those units which became operative after dead storage during the emergency. †Estimated.

TABLE 4—HIGHWAY USE OF PETROLEUM PRODUCTS
(Barrels daily)

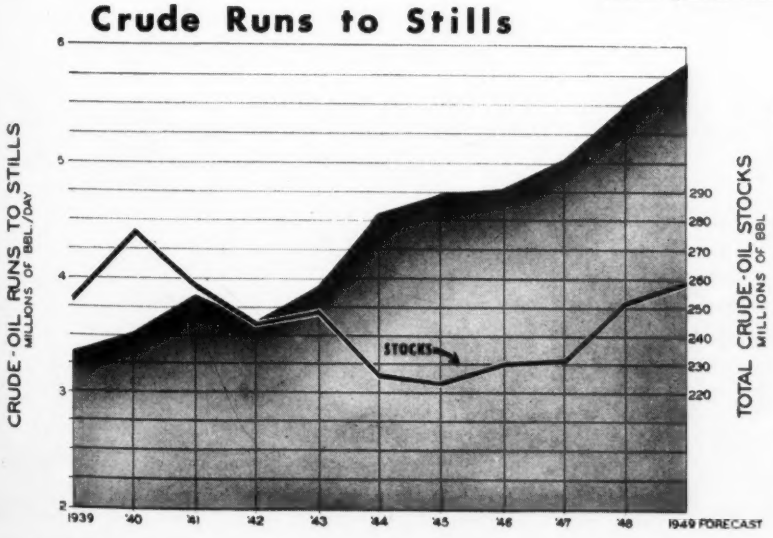
	1947	1948*	1949 forecasted
Motor fuel:			
Passenger cars	1,281,280	1,408,970	1,526,870
Trucks	465,290	508,120	530,370
Buses	41,950	42,200	41,580
Total motor fuel	1,788,520	1,959,290	2,098,820
Diesel fuel:			
Trucks	550	3,600	3,700
Buses	6,650	11,000	12,500
Total diesel fuel	7,200	14,600	16,200
Total highway consumption	1,795,720	1,973,790	2,115,020

*Fourth quarter estimated.

TABLE 5—DOMESTIC CONSUMPTION OF GASOLINE
(Barrels daily)

	1947	1948*	1949 forecasted
Highway cons. of motor fuel (Table 4)	1,788,520	1,959,290	2,098,820
Agricultural nonhighway use	170,000	185,000	194,000
Industrial use of motor fuel	62,040	69,200	71,300
Miscellaneous†	51,220	32,430	40,700
Total motor fuel	2,071,780	2,245,920	2,404,820
Aviation gasoline†	59,200	92,130	93,400
Industrial naphthas	46,580	48,550	50,000
Total	2,177,560	2,386,600	2,548,220

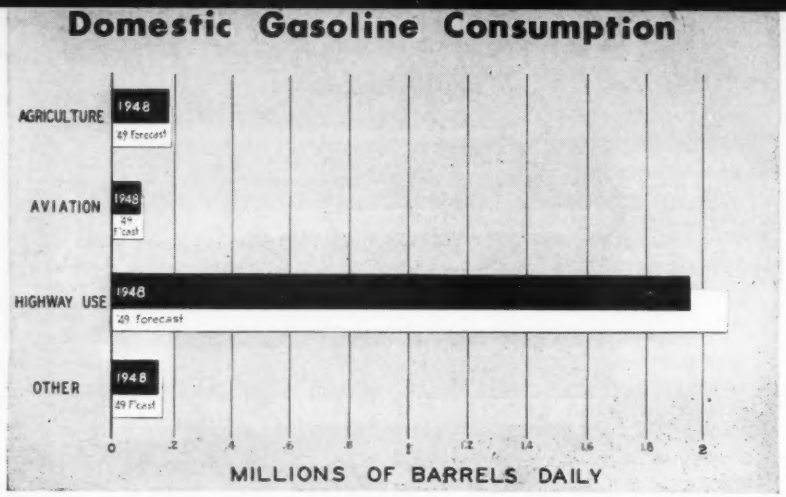
*Fourth quarter estimated. †Includes government use.



Lubricants

Domestic demand for lubricants in 1949 is forecast at 106,330 bbl. daily. The breakdown by industry and automotive units, together with comparable data for 1947 and 1948, is presented in Table 11.

In preparing this forecast it was expected that the average automotive unit would be somewhat more efficient in its use of motor oil than during recent years. It was also considered that demands for industrial lubricants would be somewhat greater relative to the level of industrial production of goods, and the indicated trend to more efficient use



of industrial lubricants during recent years will be altered by the inclusion of diesel engine oils in the category of consumption of industrial oils.

Liquefied Petroleum Gases (Including L.R.G.)

The volume of consumption forecast for L.P.G. and L.R.G. or 1949 is 10.5 per cent greater than the indicated 1948 domestic consumption. The 1948 demand for L.P.G. was equal to 3.02 per cent of total domestic demands for petroleum products as compared to a 0.7 per cent position in 1941. The historic, current and forecast consumption of L.P.G. by categories of users is presented in Table 12.

The importance of domestic demands for specific

TABLE 6—COMPONENT PARTS OF MIDDLE DISTILLATE DOMESTIC DEMAND
(Barrels daily)

	1947		1948*			1949 forecasted		
	Quantity	Per cent of U. S. domestic demand	Quantity	Per cent of U. S. domestic demand	Per cent increase over 1947	Quantity	Per cent of U. S. domestic demand	Per cent increase over 1948
Kerosine	280,840	5.15	315,090	5.38	12.2	334,910	5.39	6.3
Distillate fuels	630,570	11.55	727,770	12.40	15.4	797,250	12.84	9.6
Diesel fuels	186,470	3.43	230,000	3.92	23.5	277,570	4.47	20.5
Total middle distillate	1,097,880	20.13	1,272,860	21.70	15.8	1,409,730	22.7	10.8

*Fourth quarter estimated.

TABLE 7—DOMESTIC CONSUMPTION OF MIDDLE DISTILLATES
(Barrels daily)

	1947 actual	1948 (fourth qtr. estimated)	1949 forecasted
Range oils	189,320	220,470	239,500
Home heating	498,470	586,540	648,920
Agricultural:			
Tractor	35,340	37,700	39,330
Other (incl. tobacco curing)	5,480	6,300	6,700
Railroads:			
Distillate fuel	7,400	8,240	8,500
Diesel	56,160	76,500	101,370
Public utilities:			
Distillate fuel	20,490	21,600	22,500
Diesel	12,050	13,500	14,000
Marine:			
Distillate fuel	2,470	2,500	2,500
Diesel	35,890	36,000	36,000
Trucks and buses:			
Diesel (Table 4)	7,200	14,600	16,200
Industrial:			
Distillate fuel	44,380	45,800	46,500
Diesel	22,740	23,000	24,000
Government:			
Distillate fuel	19,450	23,160	25,510
Diesel	19,750	40,420	52,200
Miscellaneous:			
Distillate (incl. kerosine)	88,610	90,530	92,200
Diesel	32,680	25,980	31,800
Total middle distillate	1,097,880	1,272,860	1,409,730

TABLE 8—OIL BURNERS FOR HOME HEATING

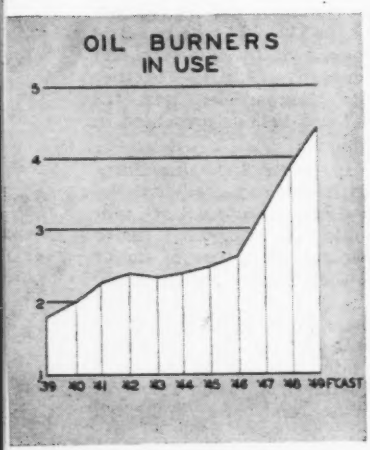
	In use end of year	Domestic sales	Scrappage	Average in use
1941	2,402	333	66	2,269
1945	2,517	146	21	2,459
1946	2,821	492	188	2,669
1947	3,650	888	59	3,236
1948*	4,080	530	100	3,865
1949	4,660	700	120	4,370

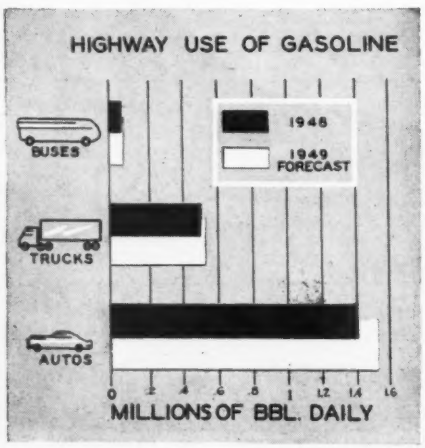
*Partially estimated.

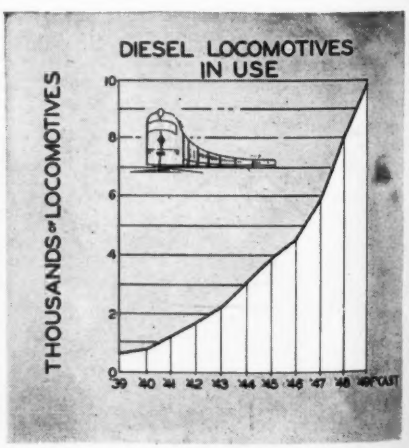
TABLE 9—LOCOMOTIVES IN USE—CLASS I RAILROADS

	Total locomotives	Diesel electric	Index 1937 = 100	Diesel as % of total locomotives
1941	41,771	1,267	582	3.04
1945	43,530	3,816	1,750	8.78
1946	42,841	4,441	2,040	10.37
1947	41,719	5,790	2,650	13.86
1948*	41,200	8,000	3,670	19.45
1949	39,500	9,800	4,500	25.00

*Partially estimated.







products relative to total domestic demands for all petroleum products for the coming year and for certain historic periods is shown in Table 13.

In projecting the demands here presented it was expected that there would be an ample supply of raw material from both domestic and foreign sources. The production of crude oil in foreign lands should be adequate to supply most of the requirements of the world excluding the United States and also provide this country with increasing amounts of crude oil and petroleum products necessary to fully meet demands.

It is anticipated that the rate of growth in demands for the principal petroleum products experienced during the last 2 years will level off to more nearly match the trends which might normally be expected. During recent years the increases in demands for some products have been almost phenomenal, but they were largely the result of certain economic factors in effect at the end of the war and which are now less pronounced.

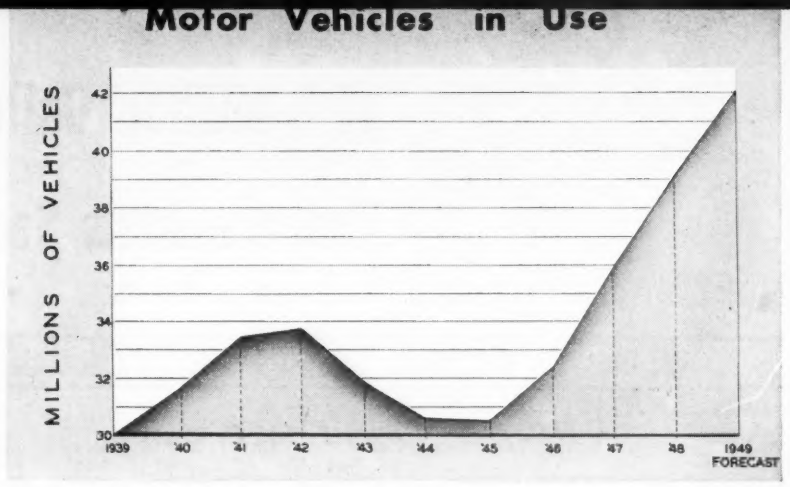


TABLE 10—DOMESTIC CONSUMPTION OF RESIDUAL FUEL
(Barrels daily)

Classes of consumers—	1947	1948*	1949
Commercial heating	158,630	170,000	175,000
Railroads	270,400	260,000	245,000
Public utilities	178,080	178,000	185,000
Industry	431,100	440,000	450,000
Marine equipment	275,450	244,000	245,000
Government	91,500	104,200	114,000
Miscellaneous	15,100	13,540	15,000
Total	1,420,260	1,409,740	1,429,000

*Fourth quarter estimated.

TABLE 11—DOMESTIC CONSUMPTION OF LUBRICANTS
(Barrels daily)

Motor oils:	1947	1948	1949
Automotive	50,990	54,130	57,000
Aviation	1,320	2,050	2,330
Total	52,310	56,180	59,330
Industrial lubes	47,690	42,800	47,000
Total lubes	100,000	99,980	106,330

TABLE 12—DOMESTIC SALES OF LIQUEFIED PETROLEUM GASES
(Barrels daily)

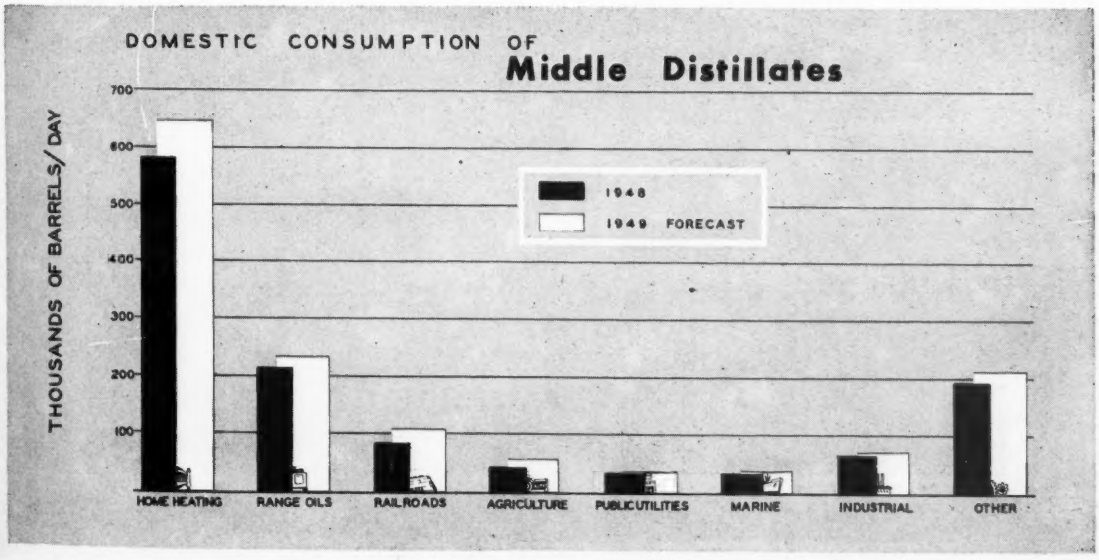
	1946	1947†	1948*	1949
Home users	49,470	75,050	92,000	108,000
Public utilities	5,650	11,050	15,000	15,000
Industrial fuels	10,380	11,320	15,000	16,000
Chemical industries‡	39,490	40,400	48,300	50,000
Internal combustion engines	6,160	6,510	6,870	7,000
All others	.....	50	60	.....
Total	111,150	144,380	177,230	196,000

*Fourth quarter estimated. †Preliminary. ‡Includes synthetic-rubber components.

TABLE 13—DOMESTIC DEMAND OF SPECIFIC PETROLEUM PRODUCTS AS PER CENT OF TOTAL DOMESTIC CONSUMPTION

	1941	1947	1948*	1949
Motor fuel	44.92	40.00	40.60	41.00
Middle distillates	16.31	20.13	21.70	22.70
Residual fuel	25.81	26.00	24.00	23.00
Lubricants and wax	2.16	1.96	1.80	1.82
Liquefied petroleum gases (including L.R.G.)	.74	2.70	3.02	3.16
Miscellaneous and losses	10.06	9.21	8.88	8.32
Total	100.00	100.00	100.00	100.00

*Fourth quarter estimated.



LIGHT HYDROCARBONS

17.7 Million Gallons Daily Light Hydrocarbons Seen for 1949

REVIEW AND FORECAST

by John C. Casper

TOTAL production of light hydrocarbons at natural-gasoline and cycling plants in 1948 set another all-time record with an average of 16,670,000 gal. per day for the year. This represents a gain of 1,481,000 gal. per day of 9.8 per cent over the production in 1947 and a 79.2 per cent increase over the prewar output in 1941. The relative growth in this segment of the industry is shown by a comparison with the gains made in crude-oil production where the record set in 1948 was slightly less than 50 per cent above the prewar 1941 level. However, the expansion in the entire petroleum industry is spectacular when compared with that of some other industries where production levels have only recently come up to records set in 1929.

It is estimated that further gains will be recorded for 1949 and that the total output from natural-gasoline and cycling plants will average 17,700,000 gal. daily for the year. Liquefied petroleum gas production is expected to average 6,560,000 gal. daily. These estimates represent gains of 6 per cent in total production and 10.5 per cent in L.P.G. production.

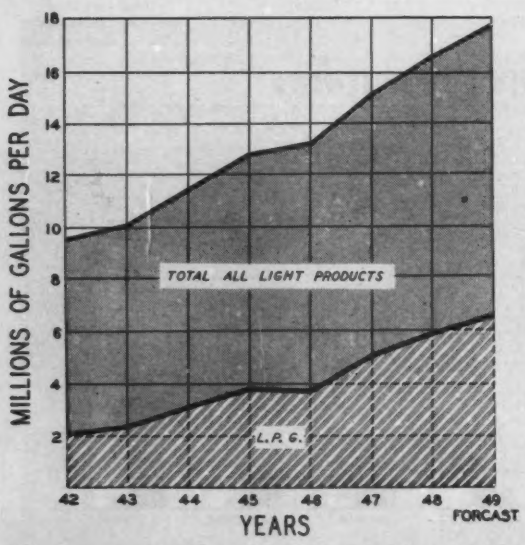
The pace setter in recent years for the light-products industry has been the production of L.P.G. which reached a record level of 5,940,000 gal. daily in 1948 for an increase of 14.7 per cent over 1947, and 351.4 per cent over prewar 1941. Prior to 1941, the products of this group represented such a small portion of plant production that no data are available which separate L.P.G. production from total output.

Thus, in less than 10 years, liquefied petroleum gases have moved from the level of byproducts of the natural-gasoline industry, to the point where they represent 36 per cent of total output at natural-gasoline and cycling plants. Since 1941, 63 per cent of the total growth in light hydrocarbons has been in the production of L.P.G.

For many years the blending of natural gasoline with refinery-produced gasoline to make automotive fuel has become an accepted practice, and as a result the expansion in production and use of natural gasoline has paralleled the growth in automotive gasoline demand. Natural-gasoline production in 1948 amounted to 8,090,000 gal. per day for an increase of 7.6 per cent over 1947 and 33.7 per cent over 1941.

Total production of light hydrocarbons by states followed the same general pattern that has existed for the past few years. Texas accounted for a little less than 50 per cent of total production for the year but had a gain over 1947 that was 64 per cent of the total increase for all states. Among the major producing states, Louisiana had highest percentage gain for period 1941-1948, an increase of 212 per cent to bring the output up to 1,930,000 gal. per day for 1948. California had a daily average production of 3,132,000 gal. for the first 8 months of 1948, but dropped to 3,050,000 gal. for the year because of lower produc-

Total Production....AT NATURAL-GASOLINE AND CYCLING PLANTS



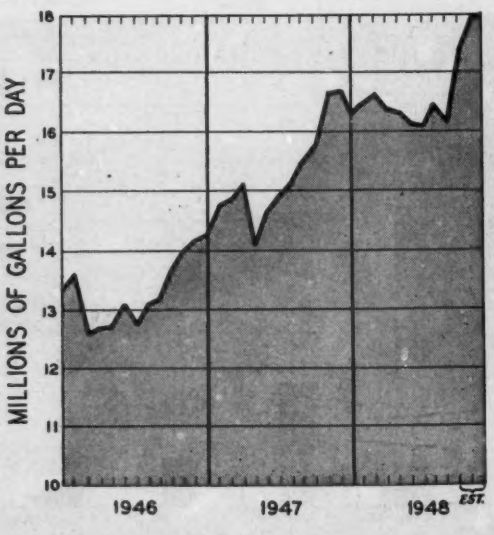


TABLE 1—PRODUCTION OF NATURAL AND CYCLE PRODUCTS BY STATES
(Thousands of gallons daily)

	Texas	California	Louisiana	Oklahoma	Other	Total
1941	4,272	1,807	618	1,242	1,365	9,304
1942	4,295	1,735	811	1,219	1,527	9,587
1943	4,510	1,899	839	1,157	1,688	10,093
1944	5,108	2,107	1,346	1,152	1,767	11,480
1945	5,995	2,443	1,505	1,140	1,805	12,888
1946	6,255	2,494	1,553	1,137	1,879	13,318
1947	7,178	2,934	1,727	1,222	2,128	15,189
*1948	8,130	3,050	1,930	1,270	2,290	16,670

*Ten months actual, 2 months estimated.

TABLE 2—PRODUCTION BY NATURAL-GASOLINE AND CYCLING PLANTS

	Natural gasoline	L.P.G.	Other products	Total	Per cent increase
1941	6,050	1,938	1,316	9,304	
1942	5,674	2,119	1,794	9,587	3.0
1943	5,796	2,495	1,802	10,093	5.3
1944	5,979	3,198	2,303	11,480	13.7
1945	6,846	3,872	2,170	12,888	12.3
1946	7,372	3,861	2,085	13,318	3.3
1947	7,517	5,177	2,495	15,189	14.0
*1948	8,090	5,940	2,640	16,670	9.8
†1949	8,420	6,560	2,720	17,700	6.1

*Ten months actual, 2 months estimated. †Forecast.

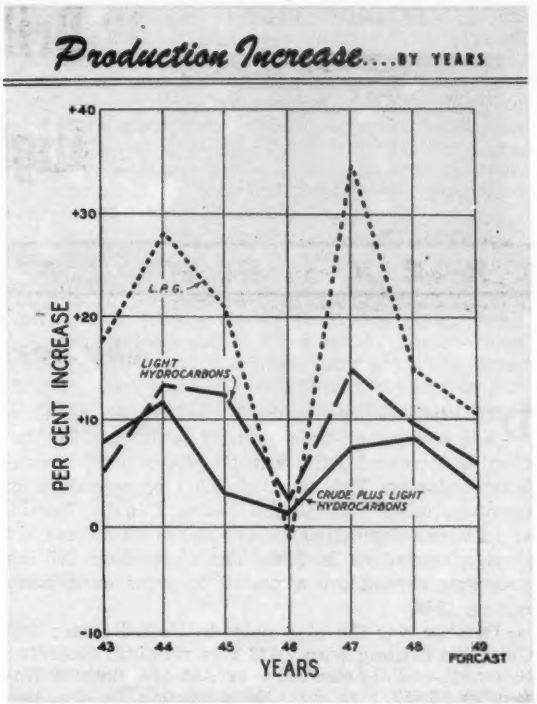
TABLE 3—DISTRIBUTION OF L.P.G. FROM NATURAL-GASOLINE AND CYCLING PLANTS

	Shipped to refineries*	Per cent increase	Fuel and chemical sales*	Per cent increase
1941	1,193	....	723	....
1942	1,174	—1.6	828	14.5
1943	1,271	8.2	1,334	61.1
1944	1,460	15.8	1,664	24.7
1945	1,800	23.3	2,299	40.0
1946	1,044	—42.0	2,936	27.7
1947	1,116	6.9	4,056	38.1
†1948	1,250	12.0	4,850	19.6

*Includes products received from outside sources. †Ten months actual, 2 months estimated.

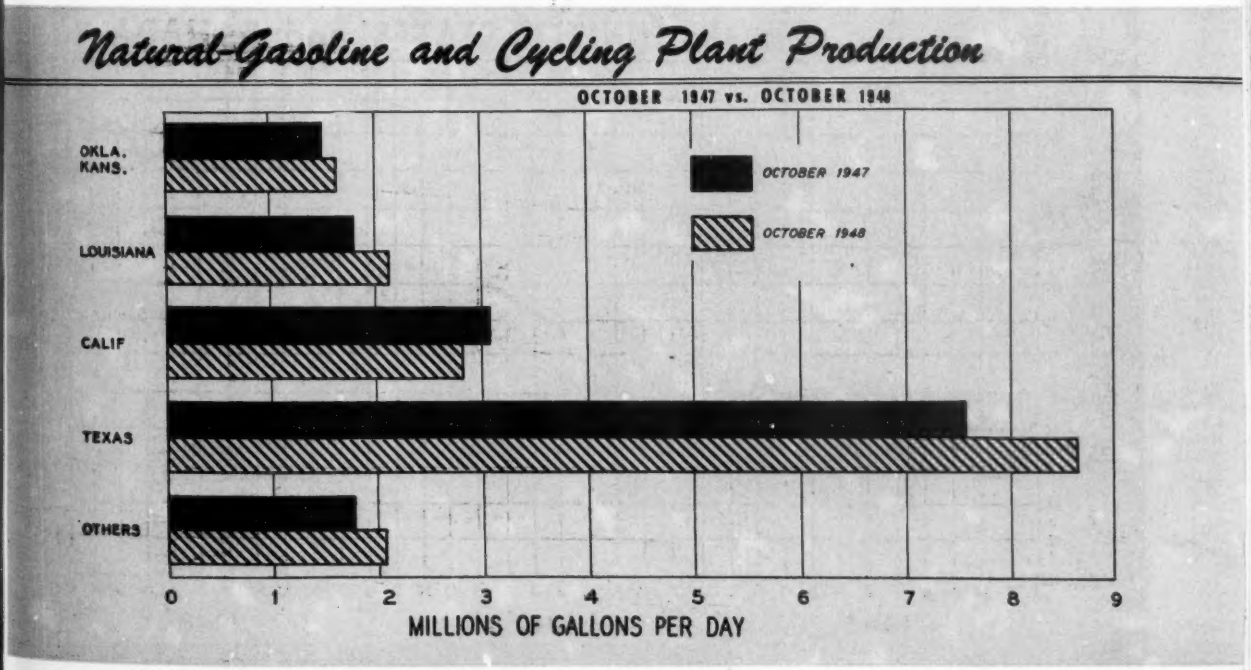
tion during and immediately following the refinery strike. Oklahoma's production of 1,270,000 gal. per day was about 4 per cent above the average for 1947.

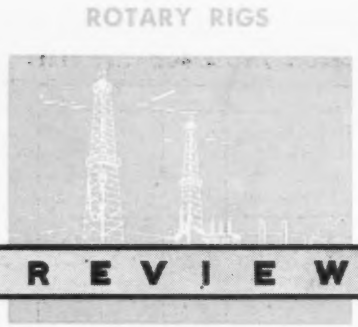
Total capacity at natural-gasoline and cycling plants was 21,322,000 gal. daily at the beginning of 1948, according to the survey of the Bureau of Mines. Current reports on new completions and expansions



indicate an increase of about 1,000,000 gal. per day by the end of the year.

Construction programs in this segment of the industry are influenced by the need for natural-gas conservation as well as by public demand for the products manufactured. The need for gas conservation still exists even though much progress has been made and the outlook for light-product demand is good. Increases in natural-gasoline demand will follow the established upward trend. The increased use of L.P.G. in new chemical processes, combined with the rapid growth in domestic consumption, seems to indicate that the market for these products will develop rapidly for several years.





Drilling Activity at All-Time High During Past Year

REVIEW AND FORECAST

by Roy F. Carlson

DRILLING activity in the United States and Canada reached all-time high levels during 1948, reflecting increased activity in all phases of the petroleum industry. The total of 499 rigs operating in countries other than United States, Canada, Russia, and Russian-dominated nations shows an increase in foreign operations in 1948. The stepped-up drilling programs abroad are expected to grow even more during 1949.

October was the high point in United States and Canadian drilling with 2,422 rigs running, according to month-end figures. However, at one time in November, 2,457 rigs were in operation in the two countries. Over one-half of these are engaged in drilling in the Permian basin and on the Gulf Coast. At the end of 1948, there were 594 in the Permian basin and 578 in the Gulf Coast area, making 1,172 in these two areas out of a total of 2,247. Western Canada had 70 rigs operating at the end of 1948, as compared with 24 at the end of 1946, and 44 at the end of 1947.

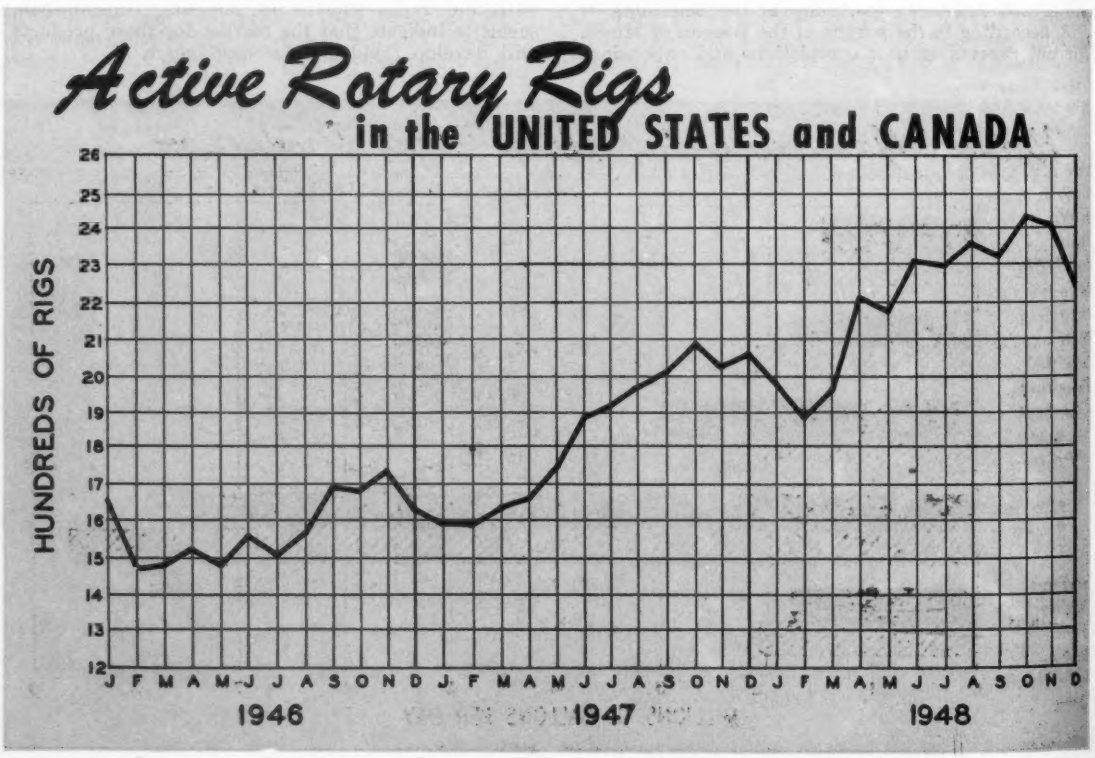
A steady increase to date in activity in both the United States and foreign countries is illustrated on the accompanying charts. Relatively large increases in foreign drilling likely will continue in 1949. Wildcatting and development in Canada are to be increased in the next year by the addition of 100 rigs to the number already there.

About 300 of the foreign operating rigs are in South America. An increase in this number of almost 50 per cent is predicted for 1949, with about one-half of the total being in Venezuela.

Middle Eastern countries are also to be subjected to an increase in drilling activity, both in development and wildcat wells. Large production is obtained with relatively few rigs in operation. It is expected that about 39 rigs will be added to those already in operation in the Middle East, including Egypt, Kuwait, Saudi Arabia, and Iran.

Unofficial estimates place the number of rigs in Russia and Russian-dominated countries at 600, the figures being based on prewar totals. The estimate is subject to considerable error since no official information is available. It includes rigs running in Romania, Austria, Hungary, Poland, and Czechoslovakia.

Although drilling activity during 1948 has been



at record levels, with a large number of rigs running and an enormous amount of footage drilled, the profit margin for the drilling contractor is, in most cases, shrinking. High equipment, labor, and maintenance costs, all showing little promise of immediate reduction, make the future for the contractor appear rather bleak. Too, a contractor must now use his best equipment, labor, and technique for any well without the thought of any premium if he is to secure contracts for future wells.

Drilling contractors feel that they have contributed greatly toward increased drilling efficiency through increased penetration rates, reduction of lost time, and improvement of equipment, and that they should share with the producer the benefits gained thereby. Especially is this true in the difficult drilling of the Permian basin and the Rocky Mountain area, where improved practices have actually lowered drilling costs despite increased prices for everything the contractor employs in making the hole.

Penetration rates at this time can, with certain exceptions, be bettered only slightly with present equipment and methods. Thorough cooperative research has minimized corrosion losses, and new muds and services have reduced many problems in penetrating formations which only a few years ago cost millions of dollars in down time and lost holes. This progress is now at the stage of paying diminishing returns. It appears that important revisions of contract rates are now due, if not overdue.

A stable efficient drilling service is necessary to the petroleum industry, and can so be maintained by rate revisions. Progress in this direction is indicated by an increase in contracts to certain hard-drilling formations, with day rates in effect thereafter to total depth. What the contractors want is more uniformity in drilling contracts, with terms affording him a chance for a fair profit to tide him over unavoidable periods of inactivity and difficult drilling setbacks.

Rotary Rigs Operating Throughout World—Year-End Figures

Pacific Coast	164
Oklahoma	253
Kansas	135
Rocky Mountains	151
Western Canada	70
No. Louisiana, East Texas and Arkansas	180
West Texas and New Mexico	594
Gulf Coast	578
Illinois	122
Total	2,247

NORTH AMERICA
(Excludes U. S. and Canada)

Alaska	2
Cuba	1
Mexico	38
Panama	1
North America	42

SOUTH AMERICA

Argentina		58
Bolivia		2
Brazil		5
Chile		3
Colombia		26
Ecuador		11
Paraguay		2
Peru		20
Trinidad		23
Venezuela:		
Eastern	76	
Central	7	
Western	68	151
South America		301

EUROPE

England	9
Denmark	2
France	15
Italy	7
Netherlands	6
Spain	3
Europe	42

AFRICA
(Excluding Egypt)

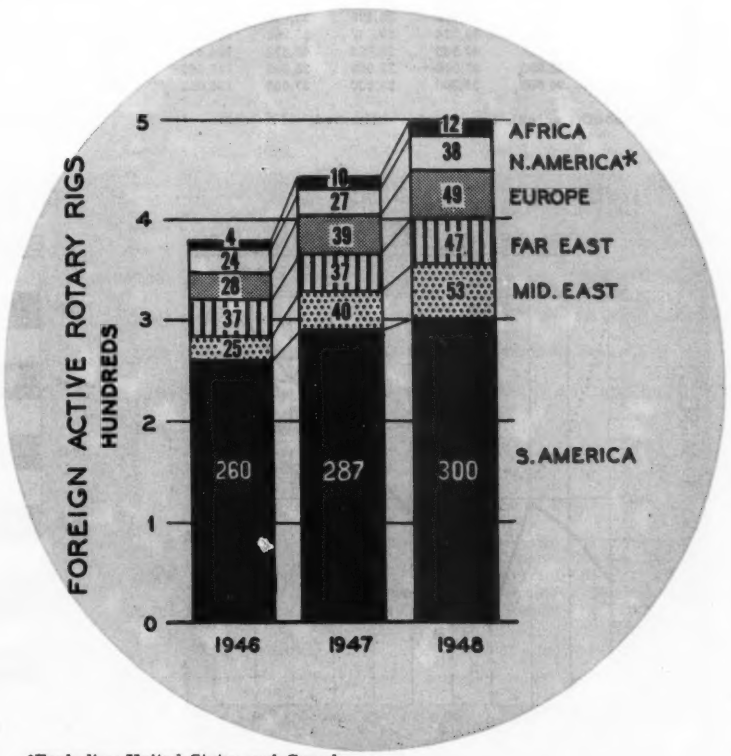
Algeria	2
French Equitorial Africa	1
Morocco	6
Tunisia	2
Africa	11

MIDDLE EAST

Bahrein	2
Egypt	8
Iran	9
Iraq	6
Kuwait	8
Lebanon	1
Qatar	2
Saudi Arabia	9
Syria	3
Turkey	2
Middle East	50

FAR EAST

Australia	2
China	4
Burma	2
East Indies	16
Philippines	1
India	12
New Guinea	5
Far East	42
Total	488



*Excluding United States and Canada.

EXPORTS—IMPORTS

1948 Imports Total 184 Million Barrels; Exports 135 Million

REVIEW AND FORECAST

by John C. Casper

TOTAL imports for 1948 are estimated at 184,000,000 bbl., based on actual figures for 10 months plus calculated amounts for the other 2 months using current reports of foreign crude runs as a base. This includes 128,000,000 bbl. of crude oil, 49,000,000 bbl. of heavy fuel, and 7,000,000 bbl. of other products. Exports of crude and refined products are estimated at 135,000,000 bbl. for the year.

Imports for 1949 may be as high as 198,000,000 bbl. This estimate is not based on policy nor is it a statement of what imports should be, but is a projection of trends that existed at the close of 1948. Total exports for 1949 are expected to be slightly higher than in 1948 with a slight drop in crude exports balanced by small increases in product shipments.

Most of our imported crude still comes from Venezuela. The only changes in the pattern for 1948 were further declines in imports from other Caribbean countries and the addition of about 22,000,000 bbl. from the Middle East.

In the past, the trend in heavy fuel imports has closely paralleled the changes in sales of fuel for foreign trade bunkering. Since bunker fuel, laden on vessels in foreign trade, declined about 8,000,000 bbl. in 1948, the 5,000,000-bbl. drop in heavy fuel imports was to be expected.

EXPORTS—CRUDE AND REFINED PRODUCTS
(Thousands of barrels)

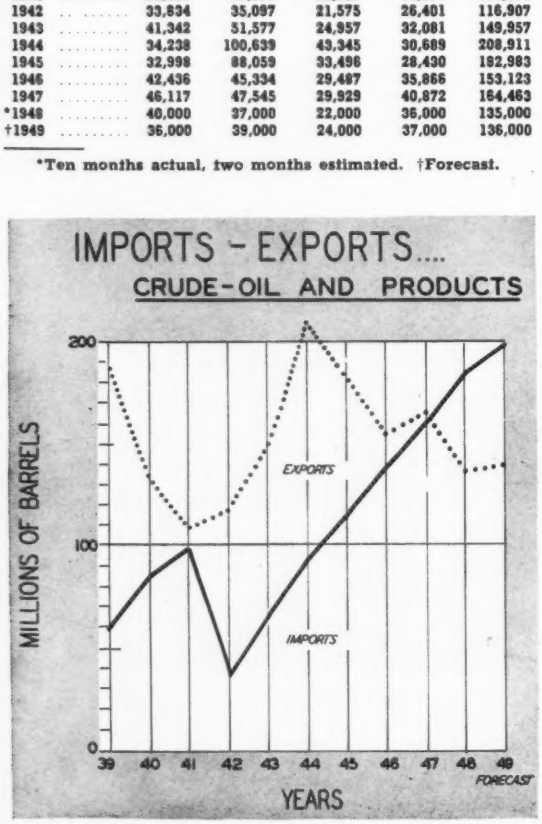
Year	Crude	Gasoline	Distillate	Other refined products	Total
1936	50,313	28,646	20,448	32,587	131,994
1937	67,234	38,306	30,129	37,165	172,834
1938	77,254	50,109	29,641	36,724	193,728
1939	72,076	44,638	32,020	40,225	188,959
1940	51,486	25,377	19,140	34,453	130,466
1941	33,238	27,083	16,925	31,584	108,830
1942	33,834	35,097	21,575	26,401	116,907
1943	41,342	51,577	24,957	32,081	149,957
1944	34,238	100,639	43,345	30,689	208,911
1945	32,998	88,059	33,496	28,430	182,983
1946	42,436	45,334	29,487	35,866	153,123
1947	46,117	47,545	29,929	40,872	164,463
*1948	40,000	37,000	22,000	36,000	135,000
†1949	36,000	39,000	24,000	37,000	136,000

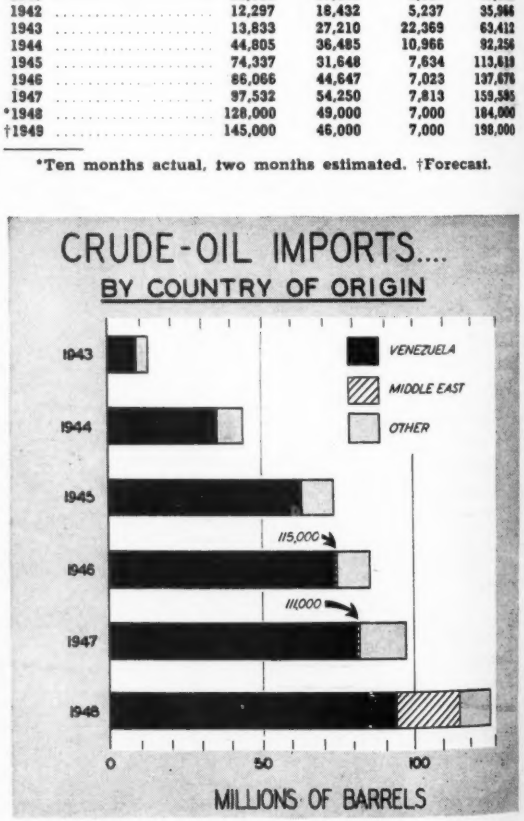
*Ten months actual, two months estimated. †Forecast.

IMPORTS—CRUDE AND REFINED PRODUCTS
(Thousands of barrels)

Year	Crude	Heavy fuel	Other products	Total
1936	32,327	18,801	5,976	57,104
1937	27,484	22,114	7,559	57,157
1938	26,412	21,065	6,831	54,308
1939	33,095	15,680	10,285	59,060
1940	42,662	29,366	11,723	83,751
1941	50,606	37,369	9,167	97,142
1942	12,297	18,432	5,237	35,966
1943	13,833	27,210	22,369	63,412
1944	44,805	36,485	10,966	92,256
1945	74,337	31,648	7,634	113,619
1946	86,066	44,647	7,023	137,676
1947	97,532	54,250	7,813	159,595
*1948	128,000	49,000	7,000	184,000
†1949	145,000	46,000	7,000	198,000

*Ten months actual, two months estimated. †Forecast.





Refinery Building Program Is Largest in Industry's History

REVIEW AND FORECAST

by R. B. Tuttle

THE Journal's fourth-quarter plant-by-plant survey of refinery-expansion projects given here includes only those which are active according to operating company reports. The volume of new projects included in this report shows the industry's expansion program is still being maintained at a fast pace, which in the over-all period is the largest program in the history of refining.

Although completion dates on some of the projects listed are shown for 1948, the projects are still active in 1949. This is due to the dates of completion of these projects being on a schedule basis rather than firm dates.

A number of new projects under building, authorized, and planned status appear in this table of the industry's expansion activity. Listing of third-quarter projects were published in the November 4, 1948, issue of The Oil and Gas Journal.

ACTIVE REFINERY BUILDING PROJECTS

Company, location and type of project—	Capacity rating	Status	Comp. schedule	Contractors
Aetna Oil Co., Louisville:				
Additional storage, bbl.	17,000	Building	Early '49	Chicago Bridge & Iron Co.
Ashland Oil & Refining Co., Catlettsburg, Ky.:				
Modernizing catalytic cracking unit, bbl. per day	12,000	Building	Late '48	Catalytic Construction Co.
Atlantic Refining Co., Philadelphia:				
Modify combination cracking unit	.....	Building	Late '48	.....
Atlantic Refining Co., Port Arthur:				
Modify combination cracking unit	.....	Building	Late '48	.....
Bareco Oil Co., Barnsdall, Okla.:				
Propane deasphalting unit, bbl. per day	600	Considering	.....	.....
Byerlyte Corp., Cleveland, Ohio:				
Install oxidizers (2), bbl. per day	1,000	Considering	Mid '49	.....
Berry Asphalt Co., Stephens, Ark.:				
Refinery expansion	.....	Planned	.....	.....
British-American Oil Co., Ltd., Port Moody, Canada:				
New refinery	.....	Planned	.....	.....
British-American Oil Co., Ltd., Montreal:				
Catalytic cracking unit, bbl. per day	13,500	Building	Sept. '49	The M. W. Kellogg Co.
Cat. polymerization unit, bbl. per day	500	Building	Late '49	The M. W. Kellogg Co.-Koch Engineering Co., Inc.
Crude distillation unit, bbl. per day	14,500	Building	Sept. '49	The M. W. Kellogg Co.
California Asphalt Corp., Portland, Ore.:				
Asphalt stills	.....	Building	Late '48	California Asphalt Co.
Carter Oil Co., Billings, Mont.:				
New refinery, bbl. per day	20,000	Building	Mid '49	Fluor Corp.-Universal Oil Products Co.
Carthage Hydrocol, Inc., Brownville, Tex.:				
Hydrocarbon synthesis plant, cu. ft. per day	100,000,000	Building	Late '49	Arthur G. McKee & Co.
Citcon Corp., Lake Charles, La.:				
Lube-oil plant, bbl. per day	6,000	Building	Mid '49	The Lummus Co.-Max B. Miller
Cities Service Oil Co. (Del.), Chicago:				
Compounding plant, bbl. per day	1,200	Authorized	Mid '49	Sumner S. Sollitt Co.
Continental Oil Co., Billings, Mont.:				
New refinery, bbl. per day	6,800	Building	Late '49	Jones & Laughlin Supply Co.
Continental Oil Co., Ponca City, Okla.:				
Crude-oil pipe still, bbl. per day	19,000	Building	Oct. '49	Bechtel Corp.
Continental Refining Co., Oil City, Pa.:				
Additional storage	.....	Planned	.....	.....
Cooperative Refinery Association, Coffeyville, Kans.:				
Dewaxing unit, bbl. per day	2,200	Building	Mid '49	Process Engineers, Inc.
Cosden Petroleum Corp., Big Springs, Tex.:				
Catalytic cracking, bbl. per day	6,000	Building	Late '49	Universal Oil Products Co., Refinery Engineering Co.
Asphalt plant, bbl. per day	2,000	Building	Mar. '49	Universal Oil Products Co. and Refinery Engineering Co.
Gas-concentration system, bbl. per day	500	Building	Early '49	Universal Oil Products Co.
Derby Oil Co., Wichita:				
Cat. cracking and plant changes	.....	Considering	.....	.....
Empire Petroleum Co., Denver:				
Crude-oil distillation unit, bbl. per day	3,000	Planned	.....	.....
Additional storage, bbl.	100,000	Planned	.....	.....
Asphalt storage warehouse	.....	Planned	.....	.....
Empire State Oil Co., Thermopolis, Wyo.:				
Crude-oil topping unit, bbl. per day	5,000	Building	Mid '49	Refinery Engineering Co.

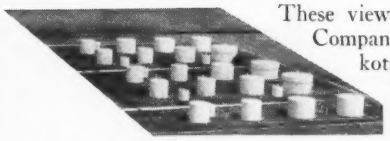
Company, location and type of project—	Capacity rating	Status	Comp. schedule	Contractors
Esso Standard Oil Co., Baton Rouge:				
Debutanizing and splitting unit,				
Cu. ft. per day	6,200,000			
Bbl. per day	11,000	Building	Early '49	C. F. Braun Co.
New mechanical shops	.....	Building	Sept. '49	C. F. Braun Co.
New main office and cafeteria	.....	Building	Mid '50	John W. Harris Associates, Inc., and Bodman & Murrell
Crude desalting, bbl. per day	18,000	Authorized	Early '49	.....
Esso Standard Oil Co., Bayonne, N. J.:				
Dewaxing unit, bbl. per day	7,500	Building	Early '50	E. B. Badger & Sons Co.
Esso Standard Oil Co., Linden, N. J.:				
Catalytic cracking unit, bbl. per day	41,000	Building	Early '49	C. F. Braun Co.
Vacuum distillation unit, bbl. per day	49,000	Building	Early '49	C. F. Braun Co.
Excelsior Refineries, Lloydminster, Alta., Canada:				
Move refinery from McMurray, bbl. per day	3,000	Building	.....	.....
General Petroleum Corp., Torrance, Calif.:				
Revamp crude unit, bbl. per day	32,000	Building	Early '49	C. F. Braun Co.
Expand cat. cracker furnace, bbl. per day	4,000	Building	Early '49	The Lummus Co.
Great Lakes Refining Co., Blue Island, Ill.:				
Catalytic cracking unit, bbl. per day	5,000	Building	1949	.....
Gulf Oil Corp., Philadelphia:				
Topping and vacuum unit, bbl. per day	30,000	Building	Sept. '49	The Lummus Co.
Gulf Refining Co., Cincinnati:				
Catalytic cracking unit, bbl. per day	15,000	Building	Sept. '49	The M. W. Kellogg Co.
Polymerization unit, bbl. per day	5,000	Building	Sept. '49	The M. W. Kellogg Co.
Gulf Refining Co., Toledo:				
Topping and vacuum unit, bbl. per day	32,000	Building	Mar. '49	E. B. Badger & Sons Co.
Catalytic cracking unit, bbl. per day	15,500	Building	Aug. '49	The M. W. Kellogg Co.
Polymerization unit, bbl. per day	5,000	Building	Aug. '49	The M. W. Kellogg Co.
Hancock Chemical Co., Watson, Calif.:				
Sulfur-recovery plant, tons per day	50	Building	Jan. '49	E. B. Badger & Sons Co.
Hi-Way Refineries, Regina, Sask., Canada:				
Thermal cracking unit, bbl. per day	500	Authorized	Late '49	Universal Oil Products Co. and Refinery Engineering Co.
Crude-oil unit, bbl. per day	1,500	Authorized	Late '49	Universal Oil Products Co. and Refinery Engineering Co.
Humble Oil & Refining Co., Baytown, Tex.:				
Pipe still, bbl. per day	45,000	Building	Late '49	Foster Wheeler Corp.
Solvent extraction unit, bbl. per day	7,000	Building	Early '50	The M. W. Kellogg Co.
Husky Refining Co., Lloydminster, Canada:				
Increase refinery capacity, bbl. per day	5,000	Building	Early '49	.....
Hutex Oil & Refining Co., Hardin, Tex.:				
Skimming unit, bbl. per day	1,000	Considering	Mid '49	.....
Fractionators for solvents	.....	Considering	Mid '49	.....
Imperial Oil, Ltd., Edmonton, Canada:				
Moving refinery, bbl. per day	6,000	Building	Early '49	M. W. Barnes
Imperial Oil Co., Ltd., Edmonton, Alta, Canada:				
Pipe still, bbl. per day	9,000	Building	Sept. '49	W. Barnes
Kanotex Refining Co., Arkansas City, Kans.:				
Catalytic desulfurization-reforming unit, bbl. per day	4,200	Building	Mid '48	Koch Engineering Co., Inc.
Revamp vapor-recovery unit, bbl. per day	1,000	Building	Late '48	Koch Engineering Co., Inc.
Lakeside Refining Co., Kalamazoo, Mich.:				
Desalting unit, bbl. per day	2,500	Building	Early '49	.....
Naphtha unit, bbl. per day	650	Considering	.....	.....
Lion Oil Co., El Dorado, Ark.:				
Topped crude vacuum reducing unit, bbl. per day	7,000	Building	Early '49	.....
Increase petrochemical plant, tons per day	140	Building	Early '49	Chemical Construction Corp
Macmillan Petroleum Corp., New Orleans, La.:				
Lube-oil canning plant	.....	Building	Early '49	E. B. Ludwig Construction Co.
Magnolia Petroleum Co., Beaumont, Tex.:				
Dewaxing unit, bbl. per day	4,100	Building	Mar. '49	The Lummus Co.
Solvent-extraction unit, bbl. per day	3,300	Building	Early '49	The Lummus Co.
Vacuum units (2), bbl. per day	9,500	Building	Early '49	The M. W. Kellogg Co.
Mercury Oil Refining Co., Oklahoma City:				
Crude-oil topping unit, bbl. per day	3,500	Building	Early '49	Refinery Engineering Co.
McCarty Chemical Co., Winnie, Tex.:				
Petrochemical plant	.....	Building	.....	Telepsen Const. Co.
McColl-Frontenac Oil Co., Ltd., Montreal:				
Catalytic cracking and cat. poly. units	.....	Building	Late '48	The M. W. Kellogg Co.
McColl-Frontenac Oil Co., Ltd., Edmonton, Alta., Canada:				
New refinery	.....	Considering	.....	.....
MFA Oil Co. (Refinery Div.), Chanute, Kans.:				
Desulfurization facilities, bbl. per day	1,000	Authorized	1949	Koch Engineering Co., Inc.
Midland Co-op. Wholesale, Cushing, Okla.:				
Thermal reforming unit, bbl. per day	1,000	Building	Mid '49	Refinery Engineering Co.
Catalytic polymer unit, bbl. per day	200	Authorized	Mid '49	Refinery Engineering Co. and Universal Oil Products Co.
Mohawk Petroleum Corp., Bakersfield, Calif.:				
Topping and feed preparation unit, bbl. per day	7,500	Authorized	1949	.....
Monarch Refineries, Inc., Oklahoma City:				
Vacuum lube unit	.....	Planned	.....	.....
North Star Refining Co., Shelby, Mont.:				
Moving refinery	.....	Planned	.....	.....
Ohio Oil Co., The, Robinson, Ill.:				
Catalytic cracking unit, bbl. per day	12,400	Building	Early '49	Universal Oil Products Co.- Arthur G. McKee & Co.
Atmospheric and vacuum unit, bbl. per day	27,500	Building	Early '49	Universal Oil Products Co.- Arthur G. McKee & Co.
Catalytic poly. unit, bbl. per day	3,800	Building	Early '49	Universal Oil Products Co.- Arthur G. McKee & Co.
Increase steam-generating plant, lb. per hr.	240,000	Building	Early '49	Arthur G. McKee & Co.
Increase electric-generating plant, kw.	10,000	Building	Early '49	Arthur G. McKee & Co.

Company, location and type of project—	Capacity rating	Status	Comp. schedule	Contractors
Gasoline-treating plant	.....	Building	Early '49	Universal Oil Products Co.-Arthur G. McKee & Co.
Old Dutch Refining Co., Muskegon, Mich.:				
Revamp thermal cracking unit	.....	Building	Early '49	.....
Pana Refining Co., Pana, Ill.:				
Revise thermal cracking unit, bbl. per day	1,800	Authorized	Mid '49	Universal Oil Products Co. and Refinery Engineering. Co.
Pan American Refining Corp. and Mexican Petroleum Corp., Baltimore:				
Replace fractionators (2)	.....	Building	.....	.....
Pan American Refining Corp. and Mexican Petroleum Corp., Texas City, Tex.:				
Increase desalter capacity	.....	Building	.....	.....
Special petroleum chemicals unit	.....	Building	.....	.....
Increase crude handling facilities	.....	Building	.....	.....
New general office and res. lab. buildings	.....	Building	.....	.....
Panhandle Producing & Refining Co., Wichita Falls, Tex.:				
Catalytic cracking unit, bbl. per day	1,500	Authorized	.....	Universal Oil Products Co. and Jones & Laughlin Supply Co.
Paraffine Companies, The, Inc., Emeryville, Calif.:				
Asphalt stills (2), bbl.	720	Building	.....	.....
Superheaters for stills	.....	Building	.....	.....
Pennzoil Co., The, Rouseville, Pa.:				
Additional boilers, lb. per hr.	45,000	Building	Early '49	Dravo Construction Co.
Petroleum Specialties, Inc., Flat Rock, Mich.:				
Crude-oil fractionator, bbl. per day	6,000	Building	Late '48	.....
Phillips Chemical Co., Etter, Tex.:				
Petrochemical plant capacity increase to, tons per year	100,000	Authorized	.....	.....
Phillips Oil Co., Kansas City, Kans.:				
Catalytic cracking unit, bbl. per day	24,000	Building	Late '49	C. F. Braun Co.
Catalytic polymerization unit, bbl. per day	1,500	Building	Late '49	C. F. Braun Co.
Compounding plant	.....	Building	Late '48	Winn-Center, Phillips
Lube oil unit, bbl. per day	1,500	Building	Early '49	The M. W. Kellogg Co.
Producers Refinery, Inc., West Branch, Mich.:				
Refinery expansion, bbl. per day	1,500	Planned	1949	.....
Pure Oil Co., Nederland, Tex.:				
Lube plant	.....	Building	Late '48	The Lummus Co.-The M. W. Kellogg Co.
Compounding and blending plant	.....	Building	Late '48	Stone & Webster Engr. Co.
Pure Oil Co., Toledo:				
Naphtha-manufacturing unit	.....	Authorized	Late '48	.....
Rado Refining Co., McAllen, Tex.:				
Crude-oil skimming, bbl. per day	2,000	Building	Mar. '49	Koch Engineering Co.
R & J Refining Co., Princeton, Ind.:				
New refinery	.....	Building	.....	.....
Republic Oil Refining Co., Texas City, Tex.:				
Polymerization unit, bbl. per day	850	Building	Dec. '48	Universal Oil Products Co.-Republic
Rock Island Refining Corp., Rock Island, Ind.:				
Catalytic cracking unit, bbl. per day	5,000	Building	Mid '49	Universal Oil Products Co.-Rock Island Staff
Root Petroleum Co., El Dorado, Ark.:				
Topping heater	.....	Building	.....	.....
Salt Lake Refining Co., Salt Lake City:				
New refinery, bbl. per day	25,000	Building	Early '49	Bechtel Corp.
Shallow Water Refining Co., Shallow Water, Kans.:				
Reforming unit, bbl. per day	1,250	Authorized	Late '49	Koch Engineering Co.
Shamrock Oil & Gas Corp., Sunray, Tex.:				
Increase refinery capacity, bbl. per day	5,000	Building	Nov. '48	.....
Shell Chemical Co., Pittsburg, Calif.:				
Ammonia plant	.....	Building	Early '49	Bechtel Corp.
Shell Oil Co., Inc., Wilmington and Martinez, Calif.:				
Gasoline treater	.....	Building	Late '48	.....
Extend insecticide plant	.....	Building	Late '48	.....
Lube-handling facilities	.....	Building	Late '48	.....
Extend tank storage	.....	Building	Late '49	Chicago Bridge & Iron Co.
Extend cracking-plant compressors	.....	Building	Late '49	Fluor Corp.
Shell Oil Co., Inc., Norco, La.:				
Fractionator, bbl. per day	12,000	Building	Late '48	.....
Sinclair Refining Co., East Chicago, Ind.:				
Lube-treating plant, bbl. per day	2,500	Building	Late '48	The Lummus Co.
Dewaxing unit	.....	Building	Mar. '49	The Lummus Co.
Waste-water purification plant	.....	Building	July '49	.....
Sinclair Refining Co., Marcus Hook, Pa.:				
Waste-water purification plant	.....	Building	May '49	.....
Desalting plant	.....	Building	Apr. '49	.....
Skelly Oil Co., El Dorado, Kans.:				
Increase refinery capacity	.....	Building	Mid '50	The M. W. Kellogg Co.
Socony-Vacuum Oil Co., Inc., Casper, Wyo.:				
Catalytic cracking unit and modernization, bbl. per day	6,900	Building	Mar. '49	Catalytic Construction Co.
Socony-Vacuum Oil Co., Inc., Augusta, Kans.:				
Catalytic cracking unit, bbl. per day	15,000	Considering	.....	.....
Socony-Vacuum Oil Co., Inc., Paulsboro, N. J.:				
Crude-oil distillation unit, bbl. per day	19,500	Building	Mid '49	E. B. Badger & Sons Co.
Propane deasphalting unit, bbl. per day	5,950	Building	Mid '49	E. B. Badger & Sons Co.
Furfural refining unit, bbl. per day	4,450	Building	Mid '49	E. B. Badger & Sons Co.
Dewaxing unit, bbl. per day	2,050	Building	Mid '49	E. B. Badger & Sons Co.
Contact filtration unit, bbl. per day	3,000	Building	.....	E. B. Badger & Sons Co.
Gasoline-treating unit, bbl. per day	25,000	Authorized	.....	E. B. Badger & Sons Co.
Kerosine-treating unit, bbl. per day	3,600	Authorized	.....	E. B. Badger & Sons Co.

Company, location and type of project—	Capacity rating	Status	Comp. schedule	Contractors
Socony-Vacuum Oil Co., Inc., East St. Louis, Ill.:				
Increase crude-oil distillation capacity, bbl. per day	15,000	Building	Oct. '49	Bechtel Corp.
Thermal cracking unit, bbl. per day	13,200	Building	Oct. '49	Bechtel Corp.
Gasoline-treating unit, bbl. per day	18,000	Building	Oct. '49	Bechtel Corp.
Delayed-coking unit, bbl. per day	8,000	Authorized	.....	Bechtel Corp.
Southwestern Oil & Refining Co., Corpus Christi, Tex.:				
Catalytic reforming unit, bbl. per day	5,000	Building	Early '49	Process Engineers, Inc.
Topping unit, bbl. per day	25,000	Building	Early '49	Process Engineers, Inc.
Standard Oil Co. of California, Bakersfield, Calif.:				
Catalytic cracking unit, bbl. per day	10,000	Authorized	Mid '49	.....
Alteration to crude unit, bbl. per day	20,000	Authorized	Mid '49	.....
Standard Oil Co. of California, Richmond, Calif.:				
Grease plant	.....	Building	Early '49	Bechtel Corp.
Standard Oil Co. of California, El Segundo, Calif.:				
Modernize filling plant	.....	Building	Late '48	.....
Standard Oil Co. (Ind.), Casper, Wyo.:				
Catalytic cracking unit, bbl. per day	8,000	Building	1949	The M. W. Kellogg Co.
Standard Oil Co. (Ind.), Whiting:				
Motor-oil facilities	.....	Building	1948	.....
Standard Oil Co. (Ohio), Lima:				
Catalytic cracking unit, bbl. per day	16,000	Building	Late '49	Arthur G. McKee & Co.
Combination crude-coking unit, bbl. per day	15,000	Authorized	Early '50	The M. W. Kellogg Co.
Lube-oil solvent-refining unit, gal. per day	76,000	Authorized	1951	The M. W. Kellogg Co.-The Lummus Co.
Solvent extraction unit, bbl. per day product	1,800	Authorized	1951	The Lummus Co.-The M. W. Kellogg Co.
Vacuum unit, bbl. per day	9,000	Authorized	Mid '50	The Lummus Co.-The M. W. Kellogg Co.
Propane deasphalting unit, bbl. per day	800	Authorized	Mid '50	The M. W. Kellogg Co.
Stanolind Oil & Gas Co., Brownsville, Tex.:				
Chemicals recovery and refining, lb. per year	100,000,000	Authorized	Early '50	E. B. Badger & Sons Co.
Stanton Chemicals, Inc., Corpus Christi, Tex.:				
Petrochemical plant, tons per day	50	Building	Late '48	.....
Sun Oil Co., Toledo:				
Catalytic cracking and topping units, bbl. per day each	30,000	Building	Late '49	Catalytic Construction Co.
Crude-oil desalting unit, bbl. per day	20,000	Authorized	.....	.....
Sun Oil Co., Marcus Hook, Pa.:				
Crude-oil desalting unit, bbl. per day	20,000	Authorized	.....	.....
Wax ref. plant	.....	Building	Early '49	.....
Packaging plant	.....	Building	Early '49	.....
Sunset Oil Co., Los Angeles:				
Additional topping facilities, bbl. per day	4,000	Authorized	Mid '49	.....
Texas Co., Westville, N. J.:				
New refinery, bbl. per day	40,000	Building	Mid '49	Foster Wheeler Corp., The M. W. Kellogg Co., Jackson-Moreland
Texas Co., West Tulsa:				
Increase refinery capacity, bbl. per day	30,000	Building	Mid '49	Foster Wheeler Corp., The M. W. Kellogg Co., Universal Oil Products Co.
Texas Co., Port Arthur, Tex.:				
Expand lube facilities (production capacity), bbl. per day	2,500	Building	Early '49	Foster Wheeler Corp.
Alter treating facilities	.....	Building	Early '49	Foster Wheeler Corp.
Texas Co., Lawrence, Ill.:				
Expand refinery, bbl. per day (added capacity)	20,000	Considered	Early '51	.....
Tide Water Associated Oil Co., Drumright, Okla.:				
Catalytic cracking unit	5,000	Authorized	Late '49	Process Engineers, Inc.
Tide Water Associated Oil Co., Bayonne, N. J.:				
Crude unit, bbl. per day	22,500	Building	Early '49	J. F. Pritchard & Co.
Propane deasphalting unit, bbl. per day	3,400	Building	Early '49	J. F. Pritchard & Co.
Solvent extraction unit, bbl. per day	8,750	Building	Early '49	J. F. Pritchard & Co.
Trans-Marine Oil & Refining Co., South Milwaukee, Wis.:				
New refinery, bbl. per day	5,000	Planned	.....	.....
Trinidad Leaseholds (Canada), Ltd., Port Credit, Canada:				
Treating plant	.....	Planned	.....	.....
Troy Refining Co., Inc., Troy, Ind.:				
Moving refinery, bbl. per day	1,800	Considering	.....	.....
Union Oil Co. of California, Oleum, Calif.:				
Plant revisions	.....	Building	1949	Refinery Maintenance Co., Inc., Ralph H. Parsons Co.
Grease-plant improvements	.....	Building	1949	J. M. Montgomery & Co.
Lube-dewaxing plant revisions, bbl. per day	1,900	Building	1949	The M. W. Kellogg Co.
Solvent extraction unit, bbl. per day	6,000	Building	1949	Max B. Miller & Co.
Asphalt loading facilities	.....	Building	1949	Early Construction Co.
Union Oil Co. of California, Wilmington, Calif.:				
Hydrogen sulfide recovery, bbl. per day	30,000	Authorized	1949	Ehrhart & Arthur, Inc.
United Refining Co., Warren, Pa.:				
New laboratory	.....	Planned	.....	.....
Increase steam-generating capacity	.....	Planned	.....	.....
Utah Oil & Refining Co., Salt Lake City:				
Propane deasphalting unit, bbl. per day	10,000	Authorized	Early '49	The M. W. Kellogg Co.
Extend steam-generating plant, lb. per hr.	65,000	Authorized	Early '49	Stearns-Roger Mfg. Co.
Western States Refining Co., North Salt Lake City, Utah:				
New refinery, bbl. per day	1,500	Building	.....	.....
Wilcox Oil Co., Bristow, Okla.:				
Install boiler, hp.	250	Building	Mar. '49	Henry Vogt Machine Co.
Winnsboro Refining Co., Winnsboro, Tex.:				
New refinery, bbl. per day	2,800	Building	Early '49	Petro-Chemical Engineering & Const. Co.
Wood River Oil & Refining Co., Wood River, Ill.:				
Catalytic cracking unit, bbl. per day	7,500	Building	Late '49	.....

Vapor-Saving Systems

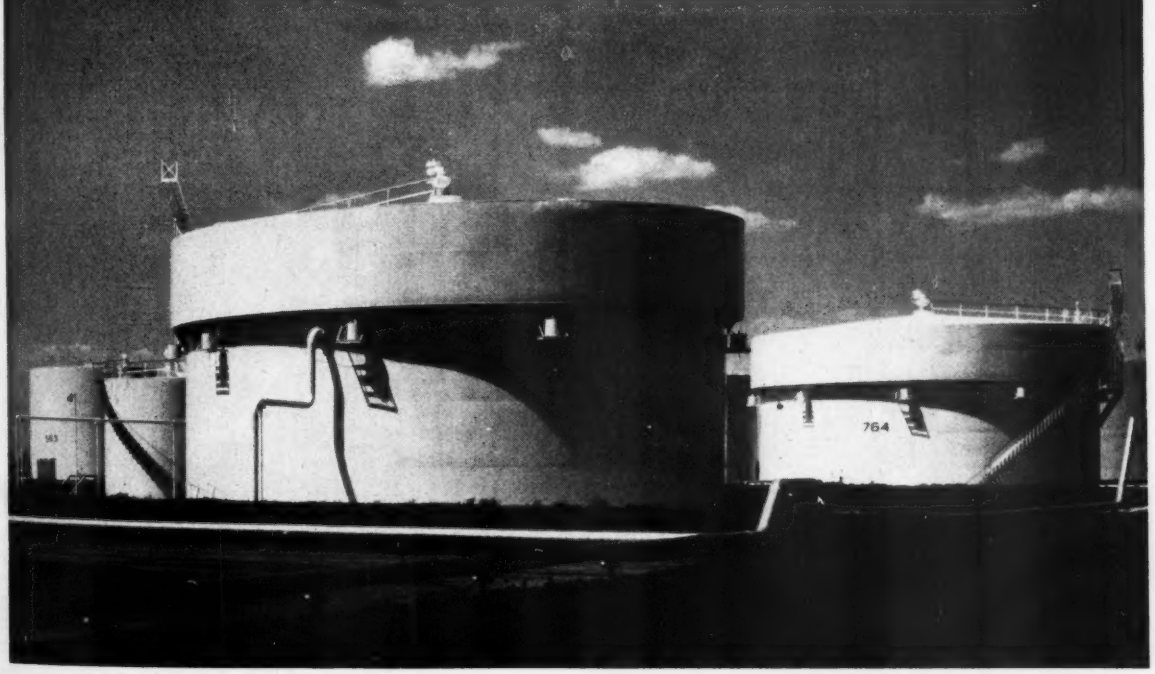
built around the HORTON LIFTER ROOFS



These views of the Great Lakes Pipe Line Company's terminal at Fargo, North Dakota, show tanks with Horton Liquid Seal Lifter Roofs used with Horton cone-roof tanks to form vapor-saving systems. The vapor spaces of the Lifter Roof tanks are connected to those of cone-roof tanks, thus providing an expansible space to collect and hold vapors which would otherwise be vented and lost by thermal expansion.

The design of the Horton Lifter Roof incorporates these advantages, (a) large capacity sealing ring provides positive seal against loss of vapor through entire travel of roof, (b) design of sealing ring reduces danger of changes in pressure causing sealing liquid to overflow, (c) mechanically operated relief vent will not allow internal pressure to force overflow of sealing liquid when roof reaches top limit of lift, (d) stairway arranged so that gauger carrying sample bottles and tape can step to roof at any height.

For details on the use of Horton Lifter Roofs, write our nearest office for a copy of Bulletin C.



CHICAGO BRIDGE & IRON COMPANY

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PENNSYLVANIA

Atlanta, 3.....2154 Healey Bldg.
Birmingham, 1.....1536 North 50th St.
Boston, 10.....1025-201 Devonshire St.
Chicago, 4.....2128 McCormick Bldg.
Cleveland, 15.....2204 Guildhall Bldg.
Detroit, 26.....1514 Lafayette Bldg.
Havana.....402 Abreu Bldg.
Houston, 2.....2119 National Standard Bldg.
Los Angeles, 14.....1423 Wm. Fox Bldg.
New York, 6.....3347-165 Broadway Bldg.
Philadelphia, 3.....1615-1700 Walnut Street Bldg.
Salt Lake City, 1..1525 First Security Bank Bldg.
San Francisco, 11..1254-22 Battery Street Bldg.
Seattle, 1.....1325 Stuart Bldg.
Tulsa, 3.....1606 Hunt Bldg.

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Horton Steel Works, Limited, Fort Erie, Ontario, Canada
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Constructions Metalliques de Provence, Arles-sur-Rhone, France
Compania Tecnica Industrie Petroli, S.A.I., Rome, Italy
Leopoldi Sol & Cia, Reconquista 558, Buenos Aires, Argentina
Whessoe, Limited, Darlington, England
Motherwell Bridge & Engineering Company, Limited, Motherwell, Scotland
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How long is a pipe line?

Measure it in labor time, and you'll discover that any pipe line is shorter when you use ARMCO Welded Steel Pipe.

That's because this light-weight pipe is so easy to handle and install. The whole job goes faster, smoother and more profitably. Lengths up to 50 feet mean fewer joints—there are just 106 in a mile. Even these go together quickly because the accurately beveled pipe ends simplify and speed field welding. Another thing, the flexibility of ARMCO Pipe means that slack loops and cold bends are no problem.

You can use ARMCO Steel Pipe with complete confidence. It has a high safety factor against internal or external pressures. And the patented method of manufacture permits visual inspection of both sides of the wall to guard against flaws.

With ARMCO Welded Steel Pipe you can match exact job requirements—save time, labor and money. Diameters range from 6 to 36 inches; wall thicknesses from 9/64- to 1/2-inch. Write for complete data. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 695 Curtis St., Middletown, Ohio. 501 Mayo Bldg., Tulsa, Okla.

Export: The Armco International Corp.

ARMCO WELDED STEEL PIPE

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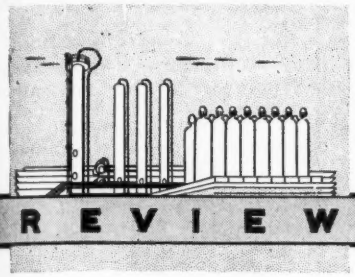
GAS-PROCESSING PLANTS

Gas-Processing Industry Is Still Enlarging Productive Capacity



REVIEW AND FORECAST

AS shown by the number of recent expansion projects listed in the accompanying table the natural-gas-processing industry is still enlarging its production capacity. New projects listed in this year-end report exceeds to some extent the completions made in the very large program that was carried on in 1948. The projects listed are only those which were reported to The Oil and Gas Journal as being on active status. The information was obtained directly from the various operating companies through the Journal's fourth quarter survey.

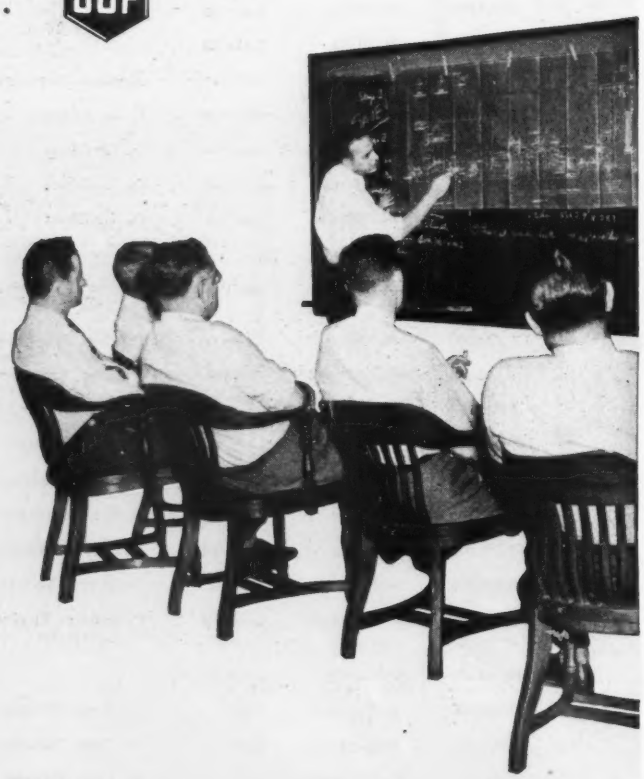
Because completion of many of the projects is set up on a schedule basis, 1948 dates appear in the completion column of the table.

NATURAL-GAS PROCESSING PLANT PROJECTS

Company, location and type of project—	Capacity rating	Status	Comp. schedule	Contractors
American Republics Corp., Hardin County, Texas:				
Extend injection system		Authorized	Late '48	Latex Construction Co.
Gasoline plant, cu. ft. per day	58,500,000	Building	Late '48	Gasoline Plant Construction Corp
Apache Gasoline Co., Caddo County, Oklahoma:				
High-pressure absorption, cu. ft. per day	3,500,000	Authorized		L. S. Gregory Co.
Arkansas Fuel Oil Co., Greggton, Tex.:				
Increase propane recovery		Building	Jan. '49	
Arkansas Fuel Oil Co., Panola County, Texas:				
Gasoline-plant capacity increase to, cu. ft. per day	100,000,000	Building	Late '48	
Arkansas Fuel Oil Co., Waskom, Tex.:				
Gasoline-plant capacity increase to cu. ft. per day	72,000,000	Building	Jan. '49	
Increase plant capacity, cu. ft. per day	30,000,000	Building	Jan. '50	
Arkansas Fuel Oil Co., Jefferson, Tex.:				
Gasoline-plant capacity increase to, cu. ft. per day	46,000,000	Building	Jan. '49	
Arkansas Fuel Oil Co., Bienville Parish, Louisiana:				
L.P.G. capacity increase to, cu. ft. per day	35,000,000	Building	Late '48	
Arkansas Fuel Oil Co., Magnolia, Ark.:				
Increase low-pressure gas input, cu. ft. per day	5,000,000	Building	Late '48	
Atlantic Refining Co., Crane County, Texas:				
Pressure-maintenance plant, cu. ft. per day	8,000,000	Building	Mid '49	Hudson Engineering Co.
Baldridge & King, San Pablo, Tex.:				
Pressure-maintenance plant, cu. ft. per day	2,500,000	Building	Mar. '49	O. L. Olsen
Barnsdall Oil Co., Placedo, Tex.:				
Compressor station, hp.	2,000	Building	May '49	O. L. Olsen
Barnsdall Oil Co., McFaddin, Tex.:				
Compressor station, hp.	1,500	Building	Feb. '49	O. L. Olsen
Barnsdall Oil Co., Bloomington, Tex.:				
Dehydration plant, cu. ft. per day	10,000,000	Building	Jan. '49	O. L. Olsen
Bolin Trust, Wichita County, Texas:				
Gas-injection plant		Authorized		
Brazos River Gas Co., Mineral Wells, Tex.:				
Gasoline plant, gal. per day	15,000	Building	1949	Robert L. Purvin and Richard Henry
California Co., Hico, La.:				
Gasoline plant	100,000,000	Building	Early '49	Hudson Engineering Co.
California Co., Brookhaven, Miss.:				
Gasoline plant, cu. ft. per day	10,000,000	Building	Mid '49	Hudson Engineering Co.
California Co., The, Barataria, La.:				
Gasoline plant, cu. ft. per day	2,500,000	Considering		
Carter Oil Co., McKamie, Ark.:				
Pressure maintenance, cu. ft. per day	38,000,000	Building	Mid '49	Jones & Laughlin Supply Co.
Chicago Corp., Carthage, Tex.:				
Plant increase to, cu. ft. per day	210,000,000	Building	Mid '49	Fish Engineering Corp.
Cities Service Oil Co., Pampa, Tex.:				
Gasoline plant, cu. ft. per day	18,000,000	Building	Mid '49	Walco Engineering & Const. Co.
Claiborne Gasoline Co., Lisbon, La.:				
Plant addition, cu. ft. per day	50,000,000	Building	Late '48	Petroleum Engineering, Inc.
Continental Oil Co., Crockett County, Texas:				
Gasoline plant, cu. ft. per day	10,000,000	Authorized	Mid '49	Refinery Maintenance Co., Inc.
Coronado Gas Corp., Loco Hills field, California:				
Repressuring and extraction plant, cu. ft. per day	10,000,000	Building	Sept. '49	Petroleum Engineering Co., Fred L. Jacobs
Duval Gasoline Co., Duval County, Texas:				
Absorption plant, cu. ft. per day	10,000,000	Building	Late '48	
El Paso Natural Gas Co., Pecos County, Texas:				
Gasoline plant, cu. ft. per day	20,000,000	Authorized	1949	El Paso Natural Gas Co.
El Paso Natural Gas Co., Upton County, Texas:				
Gasoline plant, cu. ft. per day	50,000,000	Authorized	1949	El Paso Natural Gas Co.
El Paso Natural Gas Co., Ward County, Texas:				
Gasoline plant, cu. ft. per day	20,000,000	Authorized	1949	El Paso Natural Gas Co.
General Petroleum Corp., Washakie County, Wyoming:				
Recycling plant, cu. ft. per day	3,000,000	Building	Late '48	Utah Construction Co.
Grimes, Otha H., Apache, Okla.:				
Absorption plant, cu. ft. per day	2,000,000	Building	Feb. '49	L. S. Gregory Co.

Q:
What single factor has done the most to bring economical, profitable operation within the reach of all refiners?

UOP



Converted War Refinery Gives Sunray 20,000 b/d

By F. L. Martin
Executive Vice-President
Sunray Oil Corporation

THE Sunray refinery near Duncan, Okla., is currently processing approximately 20,000 barrels of Oklahoma crude every day to produce a wide range of readily marketable products—not 100-octane gasoline for which the plant was originally designed.

F. L. Martin

Built and operated during the war by Associated Refineries, this plant had been producing about 250,000 barrels of aviation gasoline a month. When it was shut down at the close of the war, doubt existed generally that it could be operated profitably under peacetime conditions.

Purchased in 1947

After consultation with the refinery's designers, Universal Oil Products Co., we decided to negotiate its purchase which was completed in October 1947. Conversion to commercial operation, making the greatest possible use of existing facilities, was begun at once under Universal's direction.

This is what we had purchased: a two-stage fluid catalytic cracking plant with a charging capacity of 12,000 barrels of fresh feed per day; a gas concentration system; a hydrogen fluoride alkylation unit which produced 2,500 barrels per day of alkylate; an isomerization plant capable of producing 300 barrels per day of isobutane; and a modern boiler plant.

Auxiliary equipment included three large forced-draft cooling towers necessitated by the heavy water requirements of the alkylation plant. Tankage included rundown, charging stock and product storage tanks. There were, as well, buildings and shops and a large loading dock.

An adequate supply of crude was at hand from the nearby Velma field and low cost electricity and natural gas were available.

Objections to Overcome

Our new refinery possessed no pipe lines to afford economical transportation for crude coming in and product going out, inasmuch as it had been designed to operate exclusively on gas oil delivered by truck, and to produce aviation gasoline shipped by tank car.

The wartime equipment included no topping unit, an essential requirement for a refinery running crude oil. There was no desalting equipment, needed in treating Velma crude. A vacuum

(Advertisement)

unit was lacking for the recovery of heavy, waxy gas oil from topped crude. A vis-breaking operation would be required to make a salable fuel oil from the heavy residue. There was no provision for treating the products of crude distillation.

Changes Called For

Our original Sunray refinery with a capacity of 12,000 barrels per day is located at Allen, Okla., some 100 miles from Duncan by pipe line route. One of the first requirements was to connect the two refineries for product exchange and storage. At the same time, a short line was needed to bring crude from the Velma field to Duncan.

As operated in wartime, the light gases from the cat cracker were charged to the alkylation unit to produce aviation alkylate. Since that procedure was not applicable to our new operating schedule, it was desirable to install a polymerization unit and a propane separation unit to prepare this product for the LPG market.

We decided to operate the cat cracker as a single stage unit and extensive changes in both the reactor and regenerator sections were necessary. The large feed heater, no longer required, and the retreat fractionating column, were taken as basic elements for a new topping unit.

In order to increase the crude capacity of the converted plant it was decided to preflash the crude. A heat exchanger from the alkylation unit and the debutanizer tower from the gas concentration system were combined into a preflashing unit. Thus, about 15 percent of light straight run gasoline is flashed off when the charge to the crude unit is preheated to about 400°F. This improvised crude unit and the preflashing system give the plant its 20,000 b/d crude capacity.

A large settler from the alkylation unit was converted into a vacuum unit; a poly unit was built to handle the gases from the crude unit and the cat cracker; a propane unit was installed. In all these, existing equipment was utilized to a great extent.

Profitable Operation

Actual construction began in October 1947, and 90 days later the topping operations were processing 18,000 bbls. per day. On April first the vacuum vis-breaking operation started producing feed stock for the catalytic cracker, and on June first the catalytic cracker was on stream.

The cooperation received from Universal Oil Products Co. completely changed the plant from a wartime operation to a practical commercial refinery within nine months, including 98 miles of six-inch products pipe line construction.

This conversion at Duncan has resulted in a very successful and profitable operation for Sunray, and at the same time has balanced refinery run to crude oil production.

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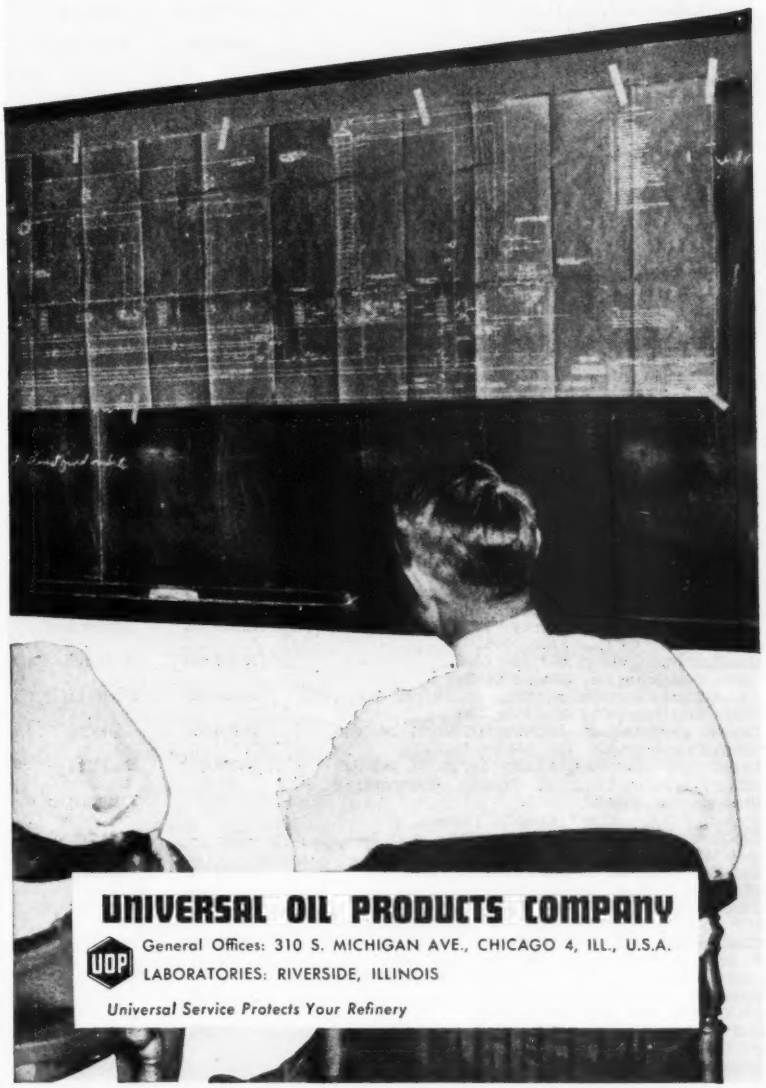
A. UOP Service—including research, development, engineering, processes and field service.



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LABORATORIES: RIVERSIDE, ILLINOIS

Universal Service Protects Your Refinery

GAS-PROCESSING PLANTS

Company, location and type of project—	Capacity rating	Status	schedule Comp.	Contractors
Grimes, Otha H., Trent, Tex.:				
Absorption plant, cu. ft. per day	2,000,000	Building	Feb. '49	L. S. Gregory Co.
Gulf Oil Corp., Drinkard, N. M.:				
Gasoline plant, cu. ft. per day	35,000,000	Building	June '49	Hudson Engineering Co.
Gulf Oil Corp., Crane County, Texas:				
Gasoline plant, cu. ft. per day	40,000,000	Building	.....	C. F. Braun Co.
Gulf Oil Corp., Keifer, Okla.:				
Extend gasoline plant, cu. ft. per day	11,000,000	Building	Mar. '49	.....
Gulf Oil Corp., Seminole, Okla.:				
Remodel gasoline plant	.....	Building	Early '49	.....
Humble Oil & Refining Co., Seeligson field, Texas:				
Gas-injection plant, cu. ft. per day	20,000,000	Building	Jan. '49	Stearns-Roger Mfg. Co.
Humble Oil & Refining Co., Conroe, Tex.:				
Enlarge gasoline plant to, cu. ft. per day	30,000,000	Building	Mid '49	Stearns-Roger Mfg. Co.
Humble Oil & Refining Co., Pickton field, Texas:				
Gasoline plant, cu. ft. per day	18,000,000	Building	Early '49	Fluor Corp.
Humble Oil & Refining Co., Opelousas, La.:				
Gasoline plant, cu. ft. per day	110,000,000	Building	Mid '49	Hudson Engineering Co.
Humble Oil & Refining Co., Flour Bluff field, Texas:				
Residue gas compression plant, cu. ft. per day	12,000,000	Authorized	Mid '49	.....
Humble Oil & Refining Co., Bloomington, Tex.:				
Gas-Compression plant, cu. ft. per day	22,000,000	Authorized	1949	.....
Humble Oil & Refining Co., Katy, Tex.:				
Additional propane absorption facilities	.....	Building	Apr. '49	Stearns-Roger Mfg. Co.
Humble Oil & Refining Co., Kelsy field, Texas:				
Gas-injection plant, cu. ft. per day	18,000,000	Building	Mar. '49	Stearns-Roger Mfg. Co.
Kansas Power & Light Co., Sawyer, Kans.:				
Addition to compressor station	.....	Building	Early '49	Dresser Engineering Co.
Kirk Pool Operator's Committee, Eastland County, Texas:				
Gasoline plant	.....	Planned	.....	.....
Lion Oil Co., Magnolia field, Arkansas:				
Dehydration unit, cu. ft. per day	15,000,000	Building	Late '48	Lion Oil Co. and R. A. Graff
Lion Oil Co., Bryceland, La.:				
Dehydration unit, cu. ft. per day	25,000,000	Building	Late '48	National Tank Co. and Lion Oil Co.
Lion Oil Co., Schuler, Ark.:				
Gas treater, cu. ft. per day	2,000,000	Building	Late '48	R. A. Graff, O. L. Olson
Lone Star Gas Co., Henderson County, Texas:				
Additional L.P.G. equipment, gal. per day	6,000	Building	Feb. '49	.....
Lone Star Gas Co., Eastland County, Texas:				
Increase L.P.G. production of, gal. per day	15,000	Considering	.....	.....
Lone Star Gas Co., Palo Pinto County, Texas:				
Hypersorption plant, gal. per day	50,000	Authorized		Foster Wheeler Co.
Magnolia Petroleum Co., Stephens County, Oklahoma:				
Gasoline plant, cu. ft. per day	30,000,000	Building	Late '49	.....
Magnolia Petroleum Co., Seeligson field, Texas:				
Cycling plant, cu. ft. per day	220,000,000	Building	Apr. '49	Hudson Engineering Co.
Magnolia Petroleum Co., Hicock, Kans.:				
Gasoline plant, cu. ft. per day	100,000,000	Building	Jan. '50	Walco Engr. & Const. Co.
Magruder, P. S., Operator, Western States gasoline plant, Kings County, Calif.:				
Absorption facilities	.....	Building	Early '49	J. B. Gill Co.
McCarty Chemical Co., Winnie, Tex.:				
Second absorption plant unit, cu. ft. per day	100,000,000	Building	.....	.....
Mid-Continent Petroleum Corp., Okfuskee County, Oklahoma:				
Gasoline plant, gal. per day	10,000	Authorized	1948	.....
Northern Natural Gas Co., Oakland, Iowa:				
Addition to compressor station	.....	Building	Late '48	Dresser Engineering Co.
Odessa Natural Gasoline Co., Odessa, Tex.:				
Enlarge gasoline plant, gal. per day	26,000	Building	Mar. '49	Jones & Laughlin Supply Co.
Paloma Operator's Unit, Paloma field, California:				
Extend absorption section, cu. ft. per day	60,000,000	Considering	.....	.....
Parade Company, Overton, Tex.:				
Increase capacity, propane recovery, gal. per day	12,500	Building	Early '49	Hudson Engineering Co.
Phillips Petroleum Co., Guymon, Okla.:				
Gasoline plant, cu. ft. per day	173,000,000	Authorized	July '49	.....
Phillips Petroleum Co., Alvin, Tex.:				
Gasoline plant, cu. ft. per day	120,000,000	Authorized	Sept. '49	.....
Phillips Petroleum Co., Goldsmith, Tex.:				
Expand gasoline-plant capacity, cu. ft. per day	40,000,000	Building	Apr. '49	.....
Phillips Petroleum Co., Andrews, Tex.:				
Expand gasoline-plant capacity by, cu. ft. per day	24,000,000	Building	Oct. '48	.....
Phillips Petroleum Co., Oil Center, N. M.:				
Expand gasoline-plant capacity by, cu. ft. per day	16,000,000	Building	Oct. '48	.....
Phillips Petroleum Co., Caddo County, Oklahoma:				
Repressuring plant		Authorized	Mid '49	Dresser Engineering Co.
Plymouth Oil Co., Upton County, Texas:				
Gasoline plant	.....	Authorized	.....	Hudson Engineering Co.
Republic Oil Refining Co., Benavides, Tex.:				
Gasoline plant, cu. ft. per day	10,000,000	Building	Late '48	Republic Oil Refining Co.
Richardson & Bass, Kermit, Tex.:				
Gasoline plant, cu. ft. per day	130,000,000	Building	Late '48	Jones & Laughlin Supply Co.
Richfield Oil Corp., Santa Barbara County, California:				
Compression plant, cu. ft. per day	12,000,000	Building	Early '49	Oil Field Construction Co.
Absorption plant, cu. ft. per day	12,000,000	Authorized	Mid '49	.....
Shamrock Oil & Gas Co., Hutchinson County, Texas:				
Installing gas-compressor unit, hp.	2,900	Building	July '49	The Shamrock O. & G. Co.
Shell Oil Co., Inc., Ventura, Calif.:				
Increase gasoline plant, gal. per day	60,000	Authorized	Late '48	.....
Shell Oil Co., Inc., Capitan field, California:				
Remodel plant	.....	Considering	.....	.....

Company, location and type of project—	Capacity rating	Status	Comp. schedule	Contractors
Shell Oil Co., Inc., Dominguez, Calif.:				
Remodel plant	.....	Considering	.....	.....
Shell Oil Co., Inc., Yoakum County, Texas:				
Gasoline-plant extension, cu. ft. per day	24,000,000	Building	Aug. '49	Fluor Corp.
Shell Oil Co., Inc., TXL field, Texas:				
Gasoline-plant extension, cu. ft. per day	45,000,000	Building	Feb. '49	Brown & Root
Shell Oil Co., Inc., Provident City, Tex.:				
Gas-stripping plant, cu. ft. per day	60,000,000	Authorized	Early '50	.....
Sinclair Prairie Oil Co., Seminole, Okla.:				
Gasoline-plant extension	.....	Building	Late' 48	Dresser Engineering Co.
Skelly Oil Co., Eunice, N. M.:				
Increase gasoline plant, gal. per day	60,000	Building	1948	J. E. Carlson & Sons Const. Co.
Skelly Oil Co., Carson County, Texas:				
Plant expansion	.....	Building	Late '49	J. E. Carlson
Slick-Urschel, Upton County, Texas:				
Gasoline plant	.....	Authorized	.....	Texas Natural Gas Corp.
Southern Union Gas Co., Kutz Canyon field, New Mexico:				
Gasoline plant, cu. ft. per day	20,000,000	Building	Apr. '49	Refinery Maintenance Co., Inc.
Standard Oil Co. of Texas, Sivells Bend, Tex.:				
Gasoline plant, cu. ft. per day	5,000,000	Building	Mid '49	.....
Stanolind Oil & Gas Co., Hugoton field, Kansas:				
Gasoline plant, cu. ft. per day	100,000,000	Building	Early '49	Jones & Laughlin Supply Co.
Stanolind Oil & Gas Co., Hockley County, Texas:				
Gasoline plant, cu. ft. per day	90,000,000	Building	Feb. '49	C. F. Braun Co.
Stanolind Oil & Gas Co., Park County, Wyoming:				
Gasoline plant, cu. ft. per day	12,000,000	Building	Apr. '49	Stone & Webster Eng. Corp.
Stanolind Oil & Gas Co., Bee County, Texas:				
Cycling plant, cu. ft. per day	168,000,000	Building	Apr. '49	Jones & Laughlin Supply Co.
Stanolind Oil & Gas Co., Hockley County, Texas:				
Gasoline plant	.....	Considering	.....	.....
Stanolind Oil & Gas Co., Andrews County, Texas:				
Gasoline plant	.....	Authorized	.....	Jones & Laughlin Supply Co
Stanolind Oil & Gas Co., North Cowden field, Texas:				
Gasoline and repressuring plant expansion	.....	Authorized	.....	Stearns-Roger Mfg. Co.
Stanolind Oil & Gas Co., Chambers County, Texas:				
Compressor plant, cu. ft. per day	14,000,000	Building	Nov. '49	J. F. Pritchard & Co.
Sun Oil Co., Starr County, Texas:				
Gasoline plant, cu. ft. per day	35,000,000	Building	May '49	Petroleum Engr., Inc.
Sun Oil Co., Coke County, Texas:				
Gasoline plant, cu. ft. per day	10,000,000	Building	Apr. '49	J. F. Pritchard & Co.
Sun Oil Co., Chambers County, Texas:				
Compressor plant, cu. ft. per day	14,000,000	Building	Dec. '49	J. F. Pritchard & Co.
Sun Oil Co., Chacahoula, La.:				
Compressor plant, cu. ft. per day	2,500,000	Building	Dec. '48	J. F. Pritchard & Co.
Sun Oil Co., N. Cankton, La.:				
Compressor plant, cu. ft. per day	1,300,000	Building	Dec. '48	J. F. Pritchard & Co.
Sun Oil Co., Shuteston, La.:				
Compressor plant, cu. ft. per day	2,750,000	Building	Dec. '48	J. F. Pritchard & Co.
Superior Oil Co., Colorado County, Texas:				
Gas-injection plant	.....	Authorized	.....	.....
Texas Natural Gasoline Co., Jones County, Texas:				
Gasoline plant, cu. ft. per day	4,500,000	Building	Sept. '48	.....
Texas Co., Electra, Tex.:				
Absorption plant, cu. ft. per day	2,000,000	Authorized	Late '48	.....
Texas Co., The, Archer City, Tex.:				
Gasoline plant, cu. ft. per day	3,500,000	Building	July '49	O. L. Olsen
Texhoma Natural Gas Co., Moore County, Texas:				
Gas-compression plant, cu. ft. per day	90,000,000	Building	Feb. '49	Midwestern Constructors
Union Oil Co. of California, Brea Olinda field, California:				
Increase absorption facilities, cu. ft. per day	6,000,000	Considering	1949	.....
Union Oil Co. of California, Grimes Canyon, California:				
Gas-injection plant, cu. ft. per day	3,000,000	Building	Mar. '49	Industrial Engineers
Union Oil Co. of California, Lompoc field, California:				
Increase gas-injection plant, cu. ft. per day	1,500,000	Building	Mar. '49	Parkhill-Wade
Union Oil Co. of California, Montebello field, California:				
Crude-oil absorption plant, cu. ft. per day	1,000,000	Considering	.....	.....
United Gas Pipe Line Co., Carthage, Tex.:				
Gasoline plant, cu. ft. per day	100,000,000	Building	Mid '49	Hudson Engineering Co.
United Gas P. L. Co., Panola, Tex.:				
Increase plant capacity, cu. ft. per day	250,000,000	Building	May '49	.....
Universal Gasoline Co., Madill, Okla.:				
Gasoline plant, cu. ft. per day	600,000	Building	Early '49	.....
Warren Petroleum Corp., Madill, Okla.:				
Expand plant unit, gal. per day	20,000,000	Building	Early '49	Hudson Engineering Co.
Warren Petroleum Corp., Holliday, Tex.:				
Expand plant, cu. ft. per day	20,000,000	Building	Early '49	J. B. Gill Co.
Warren Petroleum Corp., Taylor's Corner, Tex.:				
Gasoline plant, cu. ft. per day	6,000,000	Building	Early '49	Walco Engineering & Const. Co.
Warren Petroleum Corp., Jacksboro, Tex.:				
Gasoline plant addition, cu. ft. per day	3,000,000	Building	Early '49	.....
Warren Petroleum Corp., Gladewater, Tex.:				
Additional L.P.G. facilities, cu. ft. per day	20,000,000	Building	Early '49	J. B. Gill Co.
Warren Petroleum Corp., Maysville, Okla.:				
Gasoline plant, cu. ft. per day	80,500,000	Building	Early '49	Dresser Engineering Co.
Wescol Oil & Gas Co., Nordheim, Tex.:				
Cycling plant, cu. ft. per day	25,000,000	Building	Nov. '48	F. S. West Co.
West Texas Gas Co., Plainview, Tex.:				
Addition to compressor station, hp.	300	Building	Late '48	W. H. Boden
West Texas Gas Co., Tahoka, Tex.:				
Addition to compressor station, hp.	300	Building	Late '48	W. H. Boden
West Texas Gas Co., Fritch, Tex.:				
Revise gasoline plant	.....	Building	.....	W. H. Boden

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	UD-18A	125 h.p. @	1600 r.p.m.
	UD-16	100 h.p. @	1800 r.p.m.
	UD-14A	76 h.p. @	1400 r.p.m.
	UD- 9	53 h.p. @	1500 r.p.m.
	UD- 6	39 h.p. @	1500 r.p.m.
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	U-6	41 h.p. @	1500 r.p.m.
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PIPE-LINE SURVEY

1948 and Future Major Pipe-Line Projects Total About 50,000 Miles

REVIEW AND FORECAST

by Paul Reed

TABLE 1—MAJOR DOMESTIC CRUDE-OIL PRODUCTS

Company—	Miles	Inch	Status	Contractor, location, and completion date
Arizona Pipe Line Co.	600	8	Planned	Permian basin-Phoenix, Ariz.
Atlantic Pipe Line Co.	382	10	Under way	A. C. Holder, Refugio-Crane, Tex., 8-31-49.
Buckeye Pipe Line Co.	110	12	Completed	Sheehan—Cygnet, Ohio, to Cleveland.
Buckeye Pipe Line Co.	82	22	Authorized	Lima to Toledo, Ohio.
Continental Pipe Line Co.	16	6	Completed	C. L. Rogers—Wichita Falls refinery to Ringgold-Joy Junction, Tex.
Cooperative Refinery Association	20	8	Completed	Jayhawk—Cowley County, Kansas.
Cooperative Refinery Association	48	6	Authorized	Cowley County, Kansas.
Derby Oil Co.	30	4	Completed	Company crews—Wellington to Chase, Kans.
Gulf Refining Co.	102	8-12	Completed	Smith Contracting Co., Latex Construction Co., Carl Dunn—Midland-Lufkin, Tex., loops.
Humble Pipe Line Co.	24	12	Completed	Sheppard-Geiger—Lytle-Ingleside, Tex.
Humble Pipe Line Co.	370	16 or 18	Under consideration	West Texas-Satsuma-Baytown, Tex. Fall of 1951.
Interstate Oil Pipe Line Co.	16	16	Completed	Latex—La. loop. 10-29-48.
Interstate Oil Pipe Line Co.	21	6-8	Completed	Mont., Miss., La. lines.
Interstate Oil Pipe Line Co.	52	12	Completed	Midwestern—Oklahoma City-Maysville, Antioch, Okla., 2-16-48.
Lion Oil Co.	20	2-3-4-6	Completed	Murry Const; Bennie Ferguson Const.—Gathering lines, Arkansas.
Magnolia Pipe Line Co.	648	20	Completed	Oklahoma Contr., H. C. Price, Eastern Const., O. C. Whitaker Co.—Corsicana, Tex.-Patoka, Ill.
Magnolia Pipe Line Co.	10	12	Completed	Sheehan, Mitchell—Lubrite, Ill.
Mid-Continent Pipe Line Co.	31	4-6	Completed	C. P. Carter, A. C. Holder—Canadian River area and Yale-Drumright, Okla.
Ohio Oil Co.	12	4	Completed	Carbon County, Wyoming.
Ohio Oil Co.	6	12	Completed	Washakie-Hot Springs counties, Wyoming.
Ohio Oil Co.	6	10	Completed	Crawford County, Illinois.
Pan American Pipe Line Co.	16	6-8	Authorized	Loop, Quitman-Kilgore, Tex.
Pan American Pipe Line Co.	42	4-6	Completed	Altgelt Const.—Gathering lines, E. and SW. Texas
Petroleum Products Refining & Producing Co.	31	4	Completed	Company crews—Hospah field to Prewitt, N. M.
Phillips Pipe Line Co.	289	12	Under way	Morrison Bros.—Odessa-Borger, Tex. May 1949.
Portland Pipe Line Co.	236	20	Planned	Portland, Me.-Montreal, Que., Can.
Rocky Mountain Pipe Line Co. (Continental)	118	10	Completed	Osage Const. Co., R. H. Fulton Co., Goldenstern & Stolper, Inc.—Denver, Colo., to Cheyenne, Wyo.
Rocky Mountain Pipe Line Co.	30	8	Completed	Goldenstern & Stolper, Inc.—Chugwater, Wyo., area.
Salt Lake Pipe Line Co.	181	8-10	Completed	Pacific Pipe Line & Engineers—Rangely, Colo., to Salt Lake City, Utah.
Shell and other companies	1,000	20	Planned	Wink, Tex.-Wilmington, Calif., 1950-1952.
Shell Pipe Line Corp.	20	10	Completed	Smith Cont.—Wheeler-Wink, Tex.
Shell Pipe Line Corp. (Ozark)*	435	22	Under way	Midwestern, Smith Contracting, Anderson Bros.—Cushing, Okla.-Wood River, Ill.
Shell Pipe Line Corp.	32.5	12	Under way	Smith Cont.—Wasson Sta., W. Tex., to Hobbs Sta., N. M.
Skelly Oil Co.	8	6	Completed	Bishop and Lock—Stephens County, Oklahoma.
Socony-Vacuum Oil Co., Inc. (White Eagle Division)	122	8	Under consideration	Big Horn basin to Casper, Wyo.
Socony-Vacuum Oil Co., Inc., (White Eagle Division)	42	6	Completed	Knupp—Graham to Sheridan County, Kansas.
Southern Pipe Line Co.	8	2-4	Completed	Brown & Root, Bishop and Odem areas, Texas.
Standard Oil Co. of California	16	6 and 10	Authorized	Wilmington-Torrance; West Montalvo-San Buena Ventura.
Stanolind Pipe Line Co.	31	10-12	Under way	C. S. Foreman—Elmont and Blaine Sta., Kans., loops.
Stanolind Pipe Line Co.	62	12	Under way	Sheehan—Orchard Farm, Kellerville, Mill Creek Jct., Mo.
Stanolind Pipe Line Co.	208	8-12-16	Completed	O. C. Whitaker, R. H. Fulton—Pilot Butte, Lost Cabin, Welch Sta., Glendo Jct., Ft. Laramie, Wyo.
Stanolind Pipe Line Co.	175	12-16	Completed	R. H. Fulton, O. C. Whitaker, Potashnick Equip,, C. S. Foreman—Loops in Nebraska.
Stanolind Pipe Line Co.	75	16	Completed	C. S. Foreman and Potashnick Equip.—Loops in Kansas.
Stanolind Pipe Line Co.	111	10-12-16	Completed	Smith Cont. and R. H. Fulton—Wheeler Sta., Fullerton Sta., Dougherty Jct., Tex.
Stanolind Pipe Line Co.	250	16-20	Completed	Midwestern and R. H. Fulton—Loops in Oklahoma.
Sun Pipe Line Co.	26	4-6	Completed	Altgelt Cons. Co.—Ross-Garcia, Tex.; Shanks and Eustace, Canales-La Gloria, Tex.
Sunray Oil Corp.	25	4	Completed	Pipe Line Service Co.—Velma lines.
Texas-Empire Pipe Line Co.	47	10	Completed	Williams Bros.—Cushing-W. Tulsa, Okla.
Texas-Empire Pipe Line Co.	197	18-20	Planned	Patoka-Wilmington, Ill.
Texas Pipe Line Co.	60	16	Completed	Latex—West Columbia, Tex.-Houston.
Texas Pipe Line Co.† (Basin System)	90	20	Completed	Morrison—Jal, N. M.-Midland, Tex.

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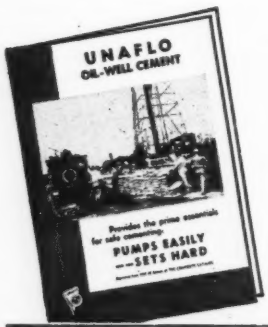

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TABLE 1—MAJOR DOMESTIC CRUDE-OIL PRODUCTS (Continued)

Company—	Miles	Inch	Status	Contractor, location, and completion date
Texas Pipe Line Co.† (Basin System)	253	22	Completed	Latex—Midland, Tex.-Wichita Falls, Tex.
Texas Pipe Line Co.† (Basin System)	173	24	Under way	Smith Cont.—Wichita Falls, Tex.-Cushing, Okla.
Texas Pipe Line Co.	87	20	Completed	Latex—Houston, Tex.-Port Arthur, Tex.
Texas Pipe Line Co.	187	12	Authorized	Wichita Falls, Tex.-Corsicana, Tex.
Texas Pipe Line Co.	54	22	Authorized	Sheehan—Wood River-Patoka, Ill.
Texas-Western Oil Lines, Inc.	1,000	20 or 24	Proposed	Midland-Odessa area, Texas, to Los Angeles, Calif.
Toronto Pipe Line Co.	13	2-3-4	Completed	Stuart Construction Co.—Goliad County, Tex.; Williams Const.—Henderson County, Tex.
Union Oil Co. of California	20	8-10	Planned	Miscellaneous crude and products.

•Ozark Pipe Line System of Shell Pipe Line Corp. and Texas Pipe Line Co. Shell Pipe Line Corp. is handling construction. †Basin (Jal-Cushing) System of Texas Pipe Line Co., Shell Pipe Line Corp., Empire Pipeline Co., Sinclair Refining Co. Texas Pipe Line Co. is handling construction.

TABLE 2—LARGE DOMESTIC PRODUCTS-LINE PROJECTS

Alamo Refining Co.	24	8	Under way	Latex—Sweeney refinery to Freeport, Tex., Gulf Coast.
Connecticut Pipe Line Co.•	40	8	Planned	New Haven-Hartford.
National Cooperative Refinery Association	25		Completed	M. E. White Pipeline Const. Co.—Council Bluffs, Iowa-Irvington, Neb.
Phillips Petroleum Co.	37	6	Completed	Borger-McKee, Tex.
Phillips Petroleum Co. and Shamrock Oil & Gas Co.•	152	6	Planned	La Junta to Denver, Colo.
Phillips Petroleum Co.	115	8	Completed	Deaton & Sons, Vaughn & Taylor—Borger, Tex.-Paola, Kans., loops.
Shell Oil Co., Inc.	14	4	Authorized	Wilmington refinery to Los Angeles, Calif.
Sinclair Refining Co.	248	6	Completed	O. C. Whitaker—Corpus Christi-San Antonio-Austin, Tex. 2-1-48.
Sinclair Refining Co.	264	10	Completed	H. C. Price—Houston-Fort Worth. 5-1-48.
Sinclair Refining Co.	185	8	Completed	Pacific Pipe Line & Engineers—Fort Worth-Panova Station, Okla. 6-1-48.
Sinclair Refining Co.	290	8	Completed	Company crews and outside contractors—Panova, Okla.-Redel, Kans., recondition crude line for products. 8-15-48.
Sinclair Refining Co.	270	8	Under way	Company crews and outside contractors—Redel, Kans.-Wood River, Ill., recondition crude line for products. 2-1-49.
Sinclair Refining Co.	20	6	Completed	Company crews and outside contractors—Redel, Kans.-Kansas City, recondition for products. 8-15-48.
Sinclair Refining Co.	26	8	Completed	John Meehan & Son Construction Co. and Ralph Hopple—Marcus Hook-Philadelphia. 1-5-49.
Sinclair Refining Co.	376	8	Under way	Company crews—Carrollton, Mo.-East Chicago, reconditioning for products. 3-1-49.
Sinclair Refining Co.	16	8	Completed	Company and contractors crews—Coffeyville, Kans., stub, 11-24-48.
Sinclair Refining Co.	19	4	Completed	Company and contractors crews—Tulsa, stub, 11-30-48
Sinclair Refining Co.	700	8	Planned	Sinclair, Wyo.-Kansas City.
Socony-Vacuum Oil Co., Inc.	127	6	Completed	Associated Contractors & Engineers—Portland-Bangor, Me. 1-1-49.
Socony-Vacuum Oil Co., Inc.	157	8	Completed	Midwestern—Binghamton, N. Y. to Malvern, Po. 1-1-49.
Socony-Vacuum Oil Co., Inc.	22	6	Under way	Midwestern Const.—Greenlane-Reading, Pa., 3-1-49
Socony-Vacuum Oil Co., Inc.	7	6	Under way	Midwestern Const.—Allentown, Pa., spur. 2-1-49.
Socony-Vacuum Oil Co., Inc.	18	6	Under consideration	Christmans-Hazleton, Pa.
Socony-Vacuum Oil Co., Inc.	5	6	Under consideration	Taylor-Exeter, Pa.
Southeastern Pipe Line Co.			Under way	Pump stations at Wawahitchka, Fla., River Junction, Fla., and Newton, Ga. (diesel division).
Sunray Oil Corp.	96	6	Completed	Pipe Line Service Co.—Allen to Duncan, Okla.
Texas Pipe Line Co.	143	10	Completed	Associated Contr. & Engrs.—Hearne-Dallas, Tex.
Texas Pipe Line Co.	26	8	Completed	Associated Contr. & Engrs.—Dallas-Fort Worth, Tex
Texas Pipe Line Co.	79	8	Completed	Latex—Hearne-Austin, Tex.
Texas Pipe Line Co.	28	6	Completed	Latex—Austin-San Marcos, Tex.
Triangle Pipe Line Co.	42	8	Completed	Rosson-Richards—Carthage-Larosen, near Shreveport, La.
Union Oil Co. of California	10	6	Planned	Torrance to Rosecrans.

•Deferred.

TABLE 3—PRINCIPAL DOMESTIC NATURAL-GAS PROJECTS

Alabama-Tennessee Natural Gas Co.	75	10	Planned	From Tenn. Gas Trans. Co. line near Selmer, Tenn., to Tuscombia, Ala.
Alabama-Tennessee Natural Gas Co.	61	6	Planned	Tuscombia to Huntsville, Ala.
Arkansas Louisiana Gas Co.	46	4-6-8	Completed	Company crews and Snelling Co.—Haynesville, La., and Magnolia, Ark., areas, 10-48.
Atlantic Gulf Gas Co. (United Gas P. L. Co.)	1,530		Planned	Alabama-Florida-Georgia-South Carolina.
Atlantic Seaboard and Virginia Gas Transmission Co.	268	24	Planned	Clendenin, W. Va.-Rockville, Md.
Central Kentucky Natural Gas Co.	38	12-20	Planned	Kentucky loops, 1949.
Central Kentucky Natural Gas Co.	23	24	Completed	Foster-Brent, Ky. 6-10-48.
Chicago District Pipeline Co.	11	24	Completed	Will County, Illinois, loop.
Chicago District Pipeline Co.	41	24	Authorized	Joliet-Chicago, Ill., 1953.
Cities Service Gas Co.•	214	26	Completed	Ray L. Smith—Ulysses-Newton, Kans., and gathering lines.
Cities Service Gas Co.•	130	26	Authorized	Newton-Ottawa, Kans.
Cities Service Gas Co.•	49	26	Completed	Midwestern Construction—Ottawa-Kansas City, Kans.
Cities Service Gas Co.		4-20	Completed	SE. Kans., 83 miles; SW. Kans., 21 miles.
Coast Counties Gas & Electric Co.	40	3-4-8	Under consideration	Coast and Valley region, California.

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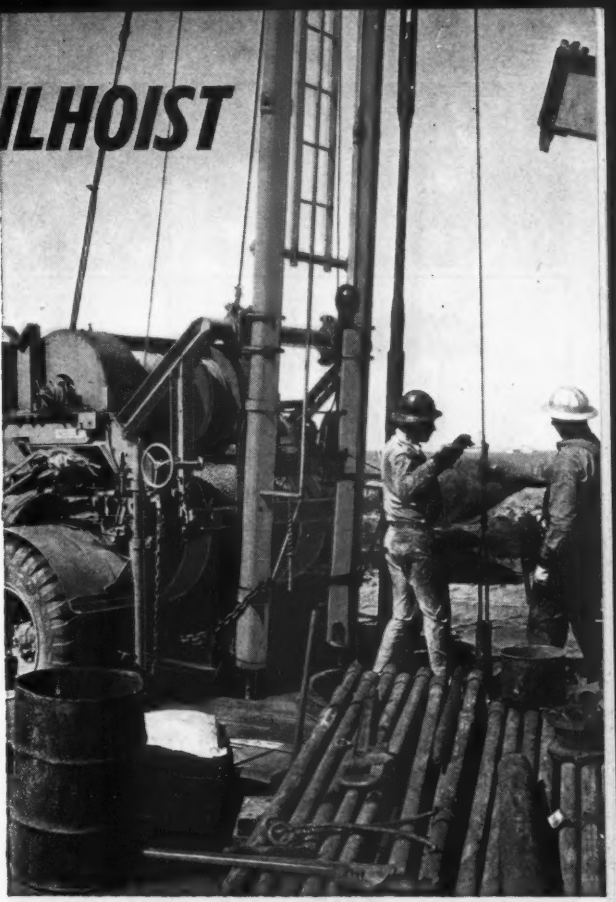

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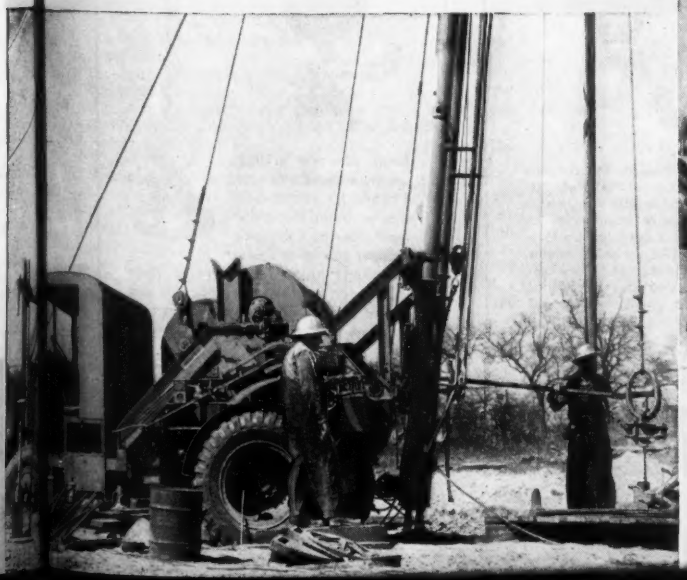
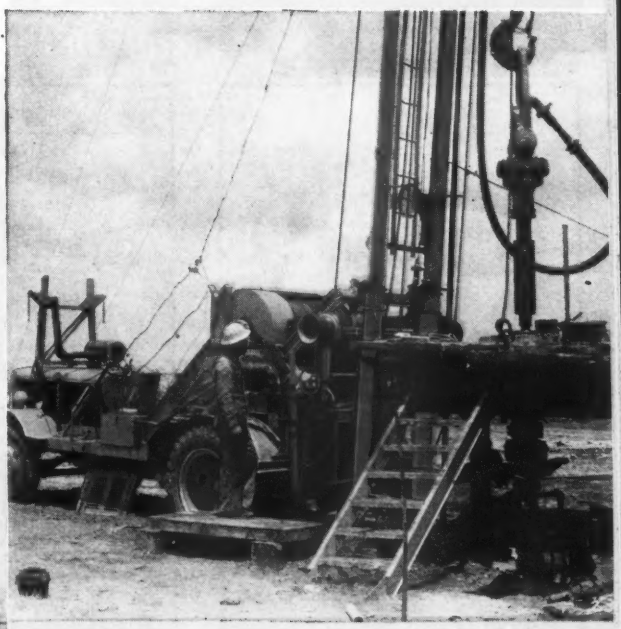
Mobilhoist with jerkline spudder assembly deepening a 3,300-foot well in Oklahoma. Air-disc friction clutches in both drums give fast, positive engagement.





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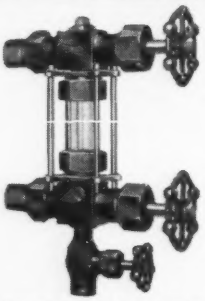

Extra heavy construction throughout. Body made from special high strength alloy iron, shanks alloy steel and trim stainless steel. Automatic and positive shut-off if glass breaks, valves self-cleaning, dripless drain cock permits gradual blowing off of gage. Conforms with A.P.I.-A.S.M.E. requirements.

The Heavy Duty "All Iron" is one of the complete line of Penberthy gages that meets every liquid level gage requirement.

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WATER GAGE SET

For oil field, locomotive type and marine boilers. Water shows black — steam shows white; the water level is unmistakable. U-Bolt construction is strongest and simplest to service. Glass replaced by simply removing nuts on face of gage . . . unnecessary to work between gage and boiler. Conforms with A.S.M.E., Federal and State requirements when used for pressures specified by their respective codes.

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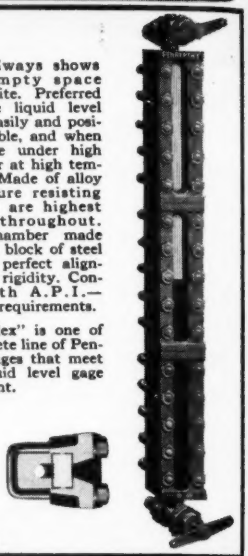

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Use the power of steam, air or water under pressure to lift liquids. Being simple jet pumps they have no moving parts and require no lubrication. A variety of models to meet different conditions. Also used as water heaters.

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TABLE 3—PRINCIPAL DOMESTIC NATURAL-GAS PROJECTS (Continued)

Company—	Miles	Inch	Status	Contractor, location, and completion date
Colorado Interstate Gas Co.	76	Various sizes	Completed	Company crews and Cheek Construction Co.—Laterals in Colorado and Kansas.
Colorado-Wyoming Gas Co.	100	6-8-16	Completed	Pacific Pipeline & Engineers—Cheyenne, Wyo.-Denver.
Commonwealth Natural Gas Corp.	537	20	Planned	West Bend, Ky.-Norfolk, Va.
Consolidated Gas Utilities	41	12	Under consideration	Enid to Blackwell, Okla.
Consolidated Gas Utilities	20	12	Under consideration	Marlow to Cement, Okla.
Dow Chemical Co.	24	12	Completed	Latex—Bay City, Tex., area.
Dowell Chemical Co.	15	8-10	Completed	Latex—Citrus Grove and Bay City, Tex., area.
East Ohio Gas Co.	84	20	Completed	Williams Brothers—Switzerland Township, Belmont County, to Jackson Township, Stark County, Ohio.
Egyptian Natural Gas Co.	80	6-8	Planned	Norris City to Salem-Centralia, Ill., areas.
East Tennessee Natural Gas Co.	398	3-16	Planned	Nashville-Chattanooga-Knoxville, Tenn., and lateral lines.
El Paso Natural Gas Co.	450	30	Under way	Company Crews—Eunice, N. M.-Blythe, Calif., 4-51.
El Paso Natural Gas Co.	105	8-10	Under way	Company crews—Wilcox-Globe, Ariz., 3-49.
El Paso Natural Gas Co.	105	24	Authorized	Company crews—Upton County, Tex.-Jap, N. M., 10-49.
El Paso Natural Gas Co.	73	30	Authorized	Company Crews—Eunice, N. M.-Topock, Ariz., loops. 10-51.
El Paso Natural Gas Co.	102	26	Authorized	Company crews—Crossover South to North Arizona.
El Paso Natural Gas Co.	248	24-30	Completed	Company crews—Dumas, Tex.-Eunice, N. M.
El Paso Natural Gas Co.	166	4-8	Completed	Company crews in Yuma, San Marvel, Phoenix, and Nogales, Ariz., areas.
Empire Southern Gas Co.	14	2-8	Completed	El Paso Nat. and Curtis Bros.—Shafter Lake and Kirk areas, Texas.
Gulfcoast Northern Gas Co.	1,184	26	Planned	Texas Gulf Coast to Chicago area.
Home Gas Co.	30	12	Completed	Britton—Hancock to Cochecton, N. Y.
Home Gas Co.	25	10	Completed	Britton—Horseheads to Dundee, N. Y.
Home Gas Co.	10	4-12	Authorized	Dundee Storage Field Lines, Yates County, New York.
Home Gas Co.	5	14	Completed	Williams Brothers Corp.—Port Jervis to Deer Park. N. Y.
Hope Natural Gas Co.	40	8-14-16	Planned	Pipe Line Const.—Kopperston, Lockney, and Hastings, W. Va.
Hope Natural Gas Co.	26	14	Completed	Pipe Line Const.—West Virginia.
Houston Pipe Line Co.	88	6-12	Completed	Latex Construction and Barry Construction—Houston area.
Houston Pipe Line Co.	67		Under way	Latex-Village Mill, Tex., area.
Illinois Northern Utilities Co.	9	4	Under way	Midwestern Cont.—Company's Oregon, Ill., regulating Station to Nat. Gas Pipe Line Co. of America's meter station.
Interstate Natural Gas Co.	4	8-10	Under way	Krotz Springs, La., area.
Iroquois Gas Corp.	13	22	Planned	Loops, New York State.
Lavaca Pipe Line Co.	38	2-8	Completed	Continental Const. Co.—Mostly Matagorda Bay, Tex., marine lines.
Lavaca Pipe Line Co.	18	6	Authorized	Continental Const. Co.—Pt. Comfort-Francitas. Tex., wrought iron line.
Lavaca Pipe Line Co.	7	4	Under way	Continental Const. Co.—Matagorda Bay, Tex.
Lone Star Gas Co.	69	20	Completed	Henderson-Dallas counties, Texas.
Lone Star Gas Co.	39	10	Completed	Hopkins-Lamar counties, Texas.
Lone Star Gas Co.	28	3-4-6-8	Completed	Hopkins-Leon-Red River counties, Texas.
Manufacturers Light & Heat Co.	118	14	Completed	Williams Brothers Corp.—Coatesville, Pa., to Port Jervis, N. Y.
Manufacturers Light & Heat Co.	29	4-12	Completed	Britton—Majorsville storage field lines, Pennsylvania.
Manufacturers Light & Heat Co.	23	4-10-12	Authorized	Pittsburgh area and Donegal and Brinker storage lines, Pennsylvania, 1948.
Manufacturers Light & Heat Co.	7	14	Completed	Richland and Britton lines to Texas Eastern Transmission Co. lines.
Manufacturers Light & Heat Co.	5	6	Authorized	Steubenville-Wintersville, Ohio.
Mesabi Pipe Line Co.	400	18	Proposed	Keokuk, Iowa-Itasca, Minn.
McCarty Oil & Gas Co.	100	12-14-16-20	Under way	Anderson Bros.—Jackson Pasture-Orange, Tex.
McCarty Oil & Gas Co.	30	6	Completed	Anderson Bros.—Winnie-Port Neches, Tex.
Michigan-Wisconsin Pipe Line Co.	455	24	Under way	J. R. Horrigan—Hansford County, Texas, to Marysville, Mo. (initial construction of 1,548-mile project)
Michigan-Wisconsin Pipe Line Co.†	340	24	Authorized	Marysville; Mo.-Sandwich, Ill.
Michigan-Wisconsin Pipe Line Co.†	252	22	Authorized	Sandwich, Ill.-Grand Rapids, Mich.
Michigan-Wisconsin Pipe Line Co.†	102	22	Authorized	Sandwich, Ill.-Milwaukee, Wis.
Michigan Consolidated Gas Co. and Austin Field Pipe Line Co.	130	24	Completed	J R. Horrigan—Austin gas-storage field, Big Rapids-Detroit, Mich.
Mississippi River Fuel Corp.	16	22	Completed	R B. Potashnick—Popular Bluff, Mo., area.
Mississippi River Fuel Corp.	221		Planned	Loops on Monroe, La.-St. Louis, Mo., line.
Montana-Dakota Utilities Co	31	8-12	Completed	C. B. Edmonds—Saco Sta. and Baker, Mont., area.
Montana-Dakota Utilities Co.	30	4	Authorized	Saco and Baker lines, 1948.
Montana-Dakota Utilities Co.	60	3-4-8-12	Authorized	Field lines for 1948 construction.
Mountain Fuel Supply Co.	37	10	Completed	Utah Const.—Salt Lake City to Provo, Utah.
Natural Gas Co. of West Virginia	5	8	Authorized	Near Salem, Ohio.
Natural Gas Pipeline Co. of America	37	26	Completed	R. H. Fulton—Hooker, Okla., to company's main line, extension to Hugoton field.
Natural Gas Pipeline Co. of America	27	26	Under way	Midwestern Constructors—Main-line looping. Iowa and Illinois.
Natural Gas Pipeline Co. of America	54	24	Completed	H. C. Price—Main-line looping, Illinois.
New York Natural Gas Corp.	8	16	Completed	Allepheny County, Pennsylvania. 11-1-48.
New York State Natural Gas Co.	45	16	Planned	Rasselas to point near State Line Sta.
Northern Natural Gas Co.	127	20-24	Authorized	Iowa, Kansas, Nebraska, Minnesota.
Northern Natural Gas Co.	58	4-24	Authorized	Hugoton and Panhandle fields.
Northern Natural Gas Co.	140	4-24	Completed	J. R. Horrigan, Brodie Const., R. H. Fulton—Clifton Kans., Hugoton and Panhandle fields.

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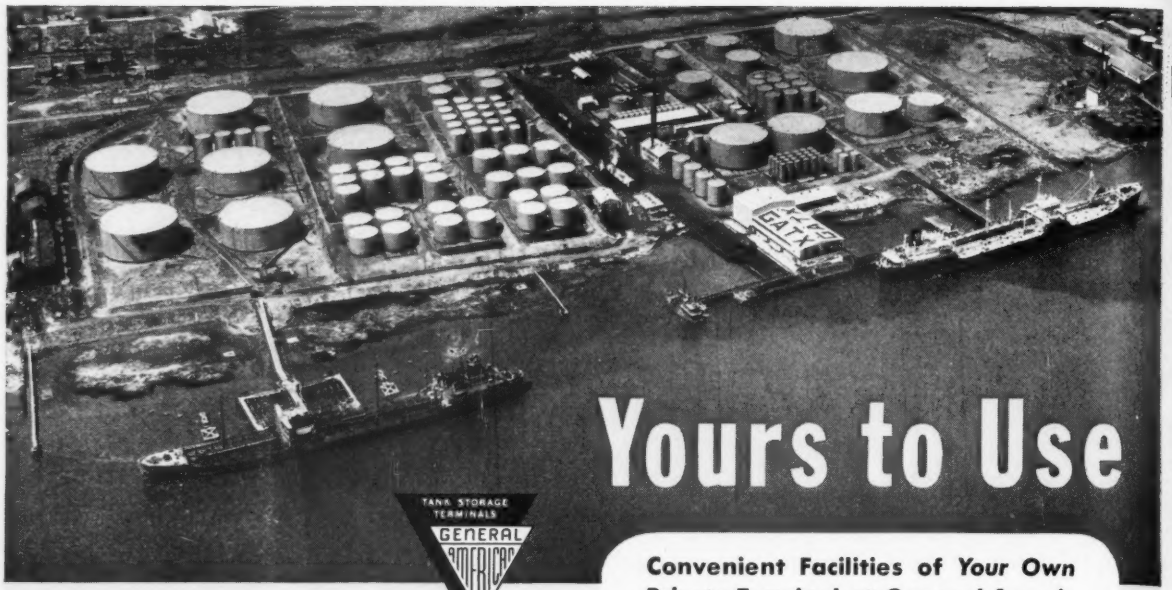
TABLE 3—PRINCIPAL DOMESTIC NATURAL-GAS PROJECTS (Continued)

Company—	Miles	Inch	Status	Contractor, location, and completion date
Northwest Natural Gas Co.	750	..	Planned	Washington, Oregon, and Idaho.
Ohio Fuel Gas Co.	88	20	Under way	Midwestern, Anderson Bros.—Crawford-Lick stations. Ohio; Lick-South Point stations, Ohio.
Ohio Fuel Gas Co.	48	20	Under way	Mahoney—Mount Gilead to Treat station; Pavonia station to Washington, Ohio.
Ohio Fuel Gas Co.	8	18	Under way	Anderson Bros.—Centerville, Ohio, to Station 16. Texas Eastern.
Ohio Fuel Gas Co.	65	10-12	Completed	H. L. Gentry—Lima-Mount Gilead via Marion, Ohio.
Ohio Fuel Gas Co.	64	3-16	Completed	Mahoney—Storage—Ohio.
Ohio Fuel Gas Co.	21	10-12	Completed	Midwestern—Storage and laterals—Ohio.
Oklahoma Natural Gas Co.	66	16	Completed	Trojan—Holdenville to Maysville, Okla. 11-15-48.
Oklahoma Natural Gas Co.	30	12	Completed	Trojan—Maysville to Velma, Okla. 12-20-48.
Oklahoma Natural Gas Co.	34	12	Completed	Trojan—Maysville to Chickasha. 10-15-48.
Oklahoma Natural Gas Co.	9	18	Completed	Trojan—Bald Hill, Okla., area. 12-1-48.
Pacific Gas & Electric Co.	510	30 or 34	Under consideration	Topock, Ariz., to Milpitas, Calif.
Pacific Gas & Electric Co.	47	8	Authorized	Salinas to Kilig City, Calif.
Pan American Gas Co.	20	16	Completed	Latex—Chocolate Bayou to Texas City, 4-18-48.
Panhandle Eastern Pipe Line Co.	43	26	Completed	R. B. Potashnick—Mo. loops.
Panhandle Eastern Pipe Line Co.	113	26	Under way	R. H. Fulton—Kans. and Okla. loops. 3-49.
Panhandle Eastern Pipe Line Co.	43	26	Completed	Midwestern Const.—Mo. and Ill. loops.
Panhandle Eastern Pipe Line Co.	524	26	Authorized	Loops from Texas and Michigan.
Peoples Natural Gas Co.	35	14	Planned	Texas Eastern to P.N.G. east of Pittsburgh.
Peoples Natural Gas Co.	28	6-10-12	Completed	Williams Bros.—Glenshaw and Beatty, Pa., areas and P. L. Const. Corp.—Wilkinsburg, Pa.
Phillips Petroleum Co.	96	8-10-14-16-24	Completed	Vaughn and Taylor—Gathering system, Hansford and Sherman counties, Texas.
Piedmont Natural Gas Corp.	900	20	Planned	Upper Gulf Coast area to Danville, Va.
Potomac Gas Co.	18	16	Planned	Dranesville to Arlington, Va.
Rocky Mountain Gas Co.	54	8	Completed	P. L. Welding Co.—Dawson and Corbett. 10-48.
San Diego Gas & Electric Co.§	53	16	Planned	San Diego County, California. 12-1-49.
San Juan Pipe Line Co. (El Paso Natural affiliate)	450	24	Planned	Farrington, N. M.-Topock, Ariz. 10-51.
Skelly Oil Co.	25	4-20	Completed	Bishop & Lock—Velma field, Oklahoma.
Southern California Gas Co.	13.3	30	Under way	Alex Robertson—Rivera to Pasadena, Calif. 12-48.
Southern California Gas Co.	43	6-8-10	Completed	Trico-Delano-Tipton-Porterville, Calif.
Southern Counties Gas Co.‡	88	30	Planned	Whitewater-Rosemead, Calif. 12-1-49.
Southern Counties Gas Co.‡	17	30	Planned	Rivera-SW. Los Angeles. 12-1-49.
Southern Counties Gas Co.§	35	16	Planned	Moreno-San Diego County, California. 12-1-49.
Southern Natural Gas Co.	138	20-22	Planned	Chattanooga, Tenn.-Lexington, Miss.
Southern Natural Gas Co.	375	24	Planned	Gwinville, Miss.-Atlanta, Ga.
Southern Natural Gas Co.	225	16	Planned	Colfax, Ga., extension.
Southern Natural Gas Co.	61	24	Under way	Latex—Eastern Alabama loop.
Southern Natural Gas Co.	40	8	Completed	Latex—Gwinville to Brookhaven, Miss.
Southern Natural Gas Co.	35	24	Completed	H. C. Price—Birmingham, Ala., loop.
Southern Natural Gas Co.	40	24	Completed	Sheehan, Miss., and Ala. loops.
Southern Pipe Line Co.	6	6	Under way	D. D. Pelty—King field to Agua Dulce field, Texas.
Southern Pipe Line Co.	19	4	Under consideration	Saxet to Elroy field, Texas.
Southern Union Gas Co.	32	10-12-14	Under way	R. H. Fulton, H. B. Zachry, J. W. Walton—Albuquerque, Santa Fe, Roswell, N. M., loops.
Southern Union Gas Co.	78	8-10-14	Planned	N. M. loops and laterals.
Southern Union Gas Co.	41	8-12	Completed	Spafford Const.—Albuquerque and Lea County loops. New Mexico.
Stanolind Oil & Gas Co.	320	2-30	Under way	Deaton & Sons—Slaughter pool, Texas.
Tennessee Gas Transmission Co.	790	20-26	Planned	Burnaugh, Ky.-Boston, including 395-mile line to Buffalo, N. Y.
Tennessee Gas Transmission Co.	992	30	Planned	The first 150 miles of loops to be laid at Monroe, La.; Greenville, Miss.; Midland and Portland, Tenn.
Tennessee Gas Transmission Co.	210	30-31	Completed	H. C. Price and Bechtel—El Campo, Tex., to Natchitoches, La.
Tennessee Gas Transmission Co.	87	24	Completed	Oklahoma Contracting Co., Inc.—Ky.-W. Va. State line to Cornwell, W. Va.
Tennessee Gas Transmission Co.	45	26	Completed	H. C. Price—Arkansas and Mississippi.
Tennessee Gas Transmission Co.	57	26	Completed	Company crews—Louisiana.
Tennessee Gas Transmission Co.	152	30-31	Completed	Texas.
Tennessee Gas Transmission Co.	55	30-31	Completed	Louisiana.
Tennessee Gas Transmission Co.	80	24	Completed	Anderson Bros.—Kentucky.
Tennessee Gas Transmission Co.	47	30	Authorized	Louisiana.
Tennessee Gas Transmission Co.	58	30	Authorized	Mississippi.
Tennessee Gas Transmission Co.	45	30	Authorized	Tennessee.
Tennessee Gas Transmission Co.	112	26	Completed	Latex Const. Co.—Mississippi and Tennessee.
Tennessee Gas Transmission Co.	65	16	Planned	Ohio-Pittsburgh spur.
Tennessee Gas Transmission Co.	46	26	Completed	J. R. Horrigan—Louisiana.
Tennessee Gas Transmission Co.	28	26	Completed	Company crews—Mississippi-Tennessee.
Tennessee Gas Transmission Co.	129	26	Completed	Anderson Bros. Corp.—Kentucky.
Tennessee Gas Transmission Co.	100	26	Completed	Morrison Bros.—Tennessee.
Tennessee Gas Transmission Co.	99	16	Completed	Agua Dulce-San Salvador, Tex.
Tennessee Gas Transmission Co.	83	20	Completed	Latex Const. Co.—Carthage, Tex., spur.
Tennessee Gas Transmission Co.	15	6	Completed	Sheppard-Geiger—Kentucky.
Texas Eastern Transmission Co.	18	8	Authorized	Silsbee and Hastings, Tex., areas.
Texas Eastern Transmission Co.	7	10-12	Authorized	Lincoln Parish, Louisiana.
Texas Eastern Transmission Co.	27	6-8-12	Completed	Brown & Root—Laterals in Chaltenham, West Conshohocken and Chester, Pa., areas.
Texas Eastern Transmission Co.	1,400	26	Planned	Texas-Pittsburgh, Pa., loops.
Texas Gas Transmission Corp.	114	20	Planned	Carthage, Tex.-Lisbon, La.
Texas Gas Transmission Corp.	663	26	Planned	Lisbon, La.-Middleton, Ohio.
Texas Gas Transmission Corp.	63	26	Completed	N. A. Saigh and J. R. Horrigan—Lulu, Miss.-Memphis, Tenn.
Transcontinental Gas Pipe Line Corp.	1,840	26	Planned	Rio Grande Valley, Tex.-New York.
Trunkline Gas Supply Co.	768	26	Proposed	Louisiana to Keokuk, Iowa.
United Fuel Gas Co.	32	20	Authorized	Roane, Calhoun and Wetzel counties, West Virginia.



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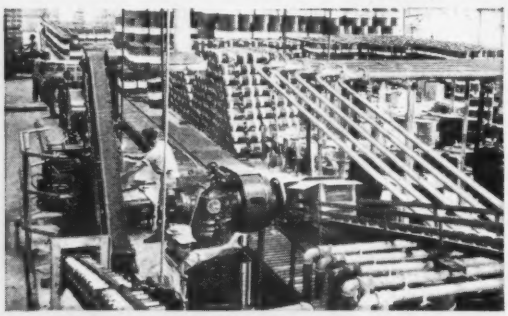

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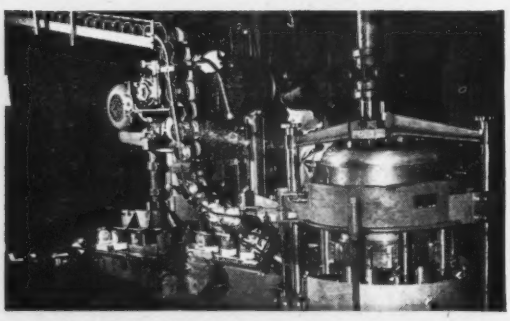

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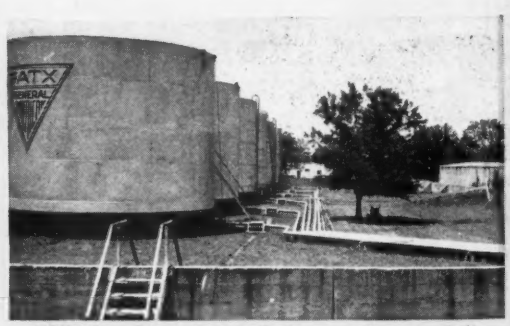

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TABLE 3—PRINCIPAL DOMESTIC NATURAL-GAS PROJECTS (Continued)

Company—	Miles	Inch	Status	Contractor, location, and completion date
United Fuel Gas Co.	10	20	Completed	Williams Bros.—Kenova, W. Va., to Burlington, Ohio. 6-9-48.
United Gas Pipe Line Co.	14	7-8	Under way	Brown & Root—West Lake Verret to Oaklawn, La.
United Gas Pipe Line Co.	8	8-10	Under way	Wood Eng. & Const.—Panola County, Texas. Connection from Lone Star gasoline plant to United company's Carthage-Longview line.
United Gas Pipe Line Co.	15	6	Completed	Mineola to Lindale, Tex.
United Gas Pipe Line Co.	33	20	Completed	Carthage-Longview, Tex.
United Gas Pipe Line Co.	93	18	Planned	Baxterville, Miss.-Mobile, Ala.
United Gas Pipe Line Co.	41	10-12	Completed	Barataria, La.-New Orleans.
United Gas Pipe Line Co.	18	6-12	Completed	Associated Cont. & Eng.—Soso, Miss., field to Jackson-Mobile 16-in. line.
United Natural Gas Co.	22	22	Authorized	Replacing 12-in. line Elk County, Pennsylvania.
United Natural Gas Co.	29	12	Authorized	Laterals, Elk County, Pennsylvania.
Warren Petroleum Co.	250	2-4-12-30	Under consideration	P. L. Service, Holland Const., George Davis—Garoin County, Oklahoma, gathering lines.
West Texas Gas Co.	29	6-8	Completed	Z. J. Graham—Littlefield and Tohoka, Tex.
West Texas Gas Co.	14	4-6	Planned	Oilton and Seagraves, Tex., laterals, 2-49.

*For the construction of Cities Service Gas Co.'s Ulysses, Kans.-Kansas City line 26-in. pipe was laid in 1948 as follows: 205 miles at the western end; 49 miles at the eastern end. In addition 9 miles of 26-in. gathering line was laid in 1948. In 1949, 130 miles of 26-in. will be laid at the Newton-Ottawa gap. †The 450-mile, 26-in. section being laid by J. R. Horrigan Construction Co. from Texas is the beginning of Michigan-Wisconsin Pipe Line Co.'s 1,548-mile project scheduled for completion July 1, 1950. The Austin Field Pipe Line Co. 130-mile, 24-in. laid by Horrigan early in 1948 is for the eastern end of the project. ‡Projects owned jointly by Southern California Gas Co. and Southern Counties Gas Co. Construction contingent upon getting approval. §Southern Counties Gas Co. 35-mile, 16-in. to connect with San Diego Gas & Electric Co. 53-mile, 16-in. for project to total 88 miles.

TABLE 4—FOREIGN CRUDE-OIL PROJECTS
1948-1955 (announced)

Company—	Miles	Diam. (in.)	Status	Location
Anglo-Iranian Oil Co., Ltd.	56	20-22	Under way	Agha Jari-Mashur, Iran.
Cia. de Petroleo Shell de Colombia	48	6	Completed	El Dificil field—Plato station of Andian Pipe Line, Colombia.
Creole Petroleum Corp.	155	24-26	Completed	Williams Bros.—Ule Tank Farm, La Salina-Amuay Bay, Paraguana, Venezuela.
Corporacion de Fomento de Chile	45	8	Planned	Manantiales (Spring Hill), Tierra del Fuego, Chile.
Imperial Pipe Line Co.	450	16	Planned	Edmonton area-Regina, Canada.
Imperial Oil, Ltd.	350		Under consideration	Regina, Sask.-Winnipeg, Man., Canada.
Iraq Petroleum Co., Ltd.	1,080	16	Under way	Company crews—Kirkuk, Iraq-Haifa, Palestine, and Tripoli, Lebanon.
Iraq Petroleum Co., Ltd.	556	30-32	Planned	Iraq-Levantine port.
Kuwait Oil Co. (Gulf and Anglo-Iranian)	1,100	30	Planned	Kuwait, Arabia to Levantine port.
Kuwait Oil Co. (Gulf and Anglo-Iranian)	600	4-30	Under way	Bechtel—Kuwait, Arabia.
Middle East Pipe Line Co.	800	34-36	Planned	Iran-Levantine port.
Nederlandsche Nieuw Guinea Petroleum Naatschappij	30		Completed	Vogelkop Section of Western New Guinea.
Petroleos Mexicanos	287	12	Under way	Pemex crews—Poza Rica-Salamanca, Mexico.
Richmond Exploration Co.	25	16-18	Completed	Williams Bros.—Boscan field to west shore of Lake Maracaibo.
Santos Jundiai Railroad	30	18	Planned	Santos-Sao Paulo, Brazil.
S.A. Petrolera las Mercedes (Texas Co. and Caracas Petroleum Co.)	157	16	Completed	Williams Bros.—Las Mercedes field—Pamatacual, Venezuela.
Trans-Arabian Pipe Line Co.	1,070	30-31	Under way	Bechtel—Abqaiq-Saudi Arabia-Sidon, Lebanon.
Yacimientos Petroliferos Fiscales de Argentina	400		Planned	Plaza Huincul-Bahia Blanca, Argentina.
Yacimientos Petroliferos Fiscales de Bolivianos	255	6	Under way	Williams Bros.—Camiri-Cochabamba-Sucre, Bolivia.

TABLE 5—FOREIGN PRODUCTS-LINE PROJECTS

Cia. des Pipe Lines Petroliers Francais*	150	10	Planned	Le Havre-Paris, France.
Colombian Government	342		Planned	Puerto Berrio-La Dorada, 92 miles; La Dorada-Bogota, 110 miles; La Dorada-Cartago, 140 miles.
Creole Petroleum Corp.	10	8	Under way	Catia de la Mar to Nueva Caracas, Venezuela.
Ministry of Petroleum of Colombia and Antioqua R.R.	107		Planned	Puerto Berrio-Madellin, Colombia.
Santos Jundiai Railroad	40	10	Planned	Santos-Sao Pauli-Campinas, Brazil.
Svenska Enterprenad Aktiebolget*	220		Planned	Uddevalla-Vasteras, Sweden.
United Kingdom Government	150	6	Under way	Shell Petroleum Co. supervision—Mtwara, near Lindi, to Ground Nuts area, Tanganyika, Africa.

TABLE 6—FOREIGN NATURAL-GAS PROJECTS

Canadian Western Natural Gas Co., Ltd.	11	16	Completed	Loops Calgary area.
Canadian Western Natural Gas Co., Ltd.	8	5-10	Authorized	Calgary area.
Cia. Mexicana de Gas de Monterrey	35	12	Completed	Mission and Camargo fields to Roma-Monterrey line, Mexico.
Direccion General del Gas del Estado	1,100	10	Under way	Tecnica and government crews—Comodoro Rivadavia-Buenos Aires, Argentina.
Northwest Natural Gas Co.	600	24	Planned	Alberta fields to Vancouver, B. C., Seattle, Wash., and Portland, Ore.
Petroleos Mexicanos	150	20	Under way	Williams Bros.—Poza Rica-Mexico City, Mexico.
Petroleos Mexicanos, Mexican Gas Co. and Industrial Gas Co.	600		Planned	Reynosa, Tamaulipas-Mexico City.
Regie Autonome des Petroles	114	6.9	Under way	Toulouse-Bordeaux, France.
U.S.S.R. (reported)	360		Under way	Dashiva (in Carpathians)-Kiev, Ukraine.
Western Pipe Lines	710	22-24	Planned	Alberta fields—Saskatoon, Alta.-Winnipeg, Man., Can.

*Deferred projects.

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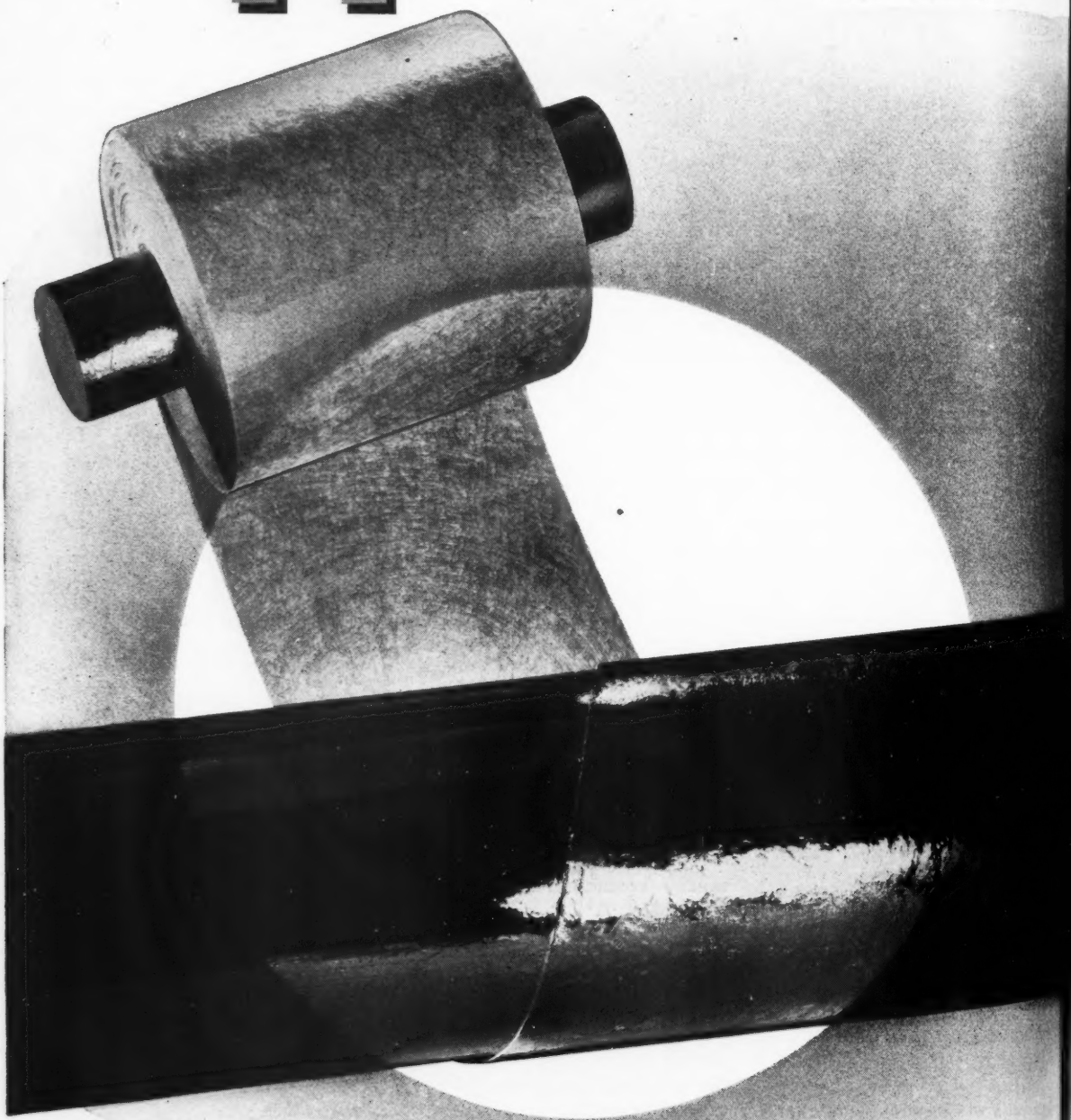

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10	**HEAT-RESISTANT**—Fiberglas Underground Pipe Wrap is not affected by hot applications (up to 450° F.) of the commonly used impregnants.
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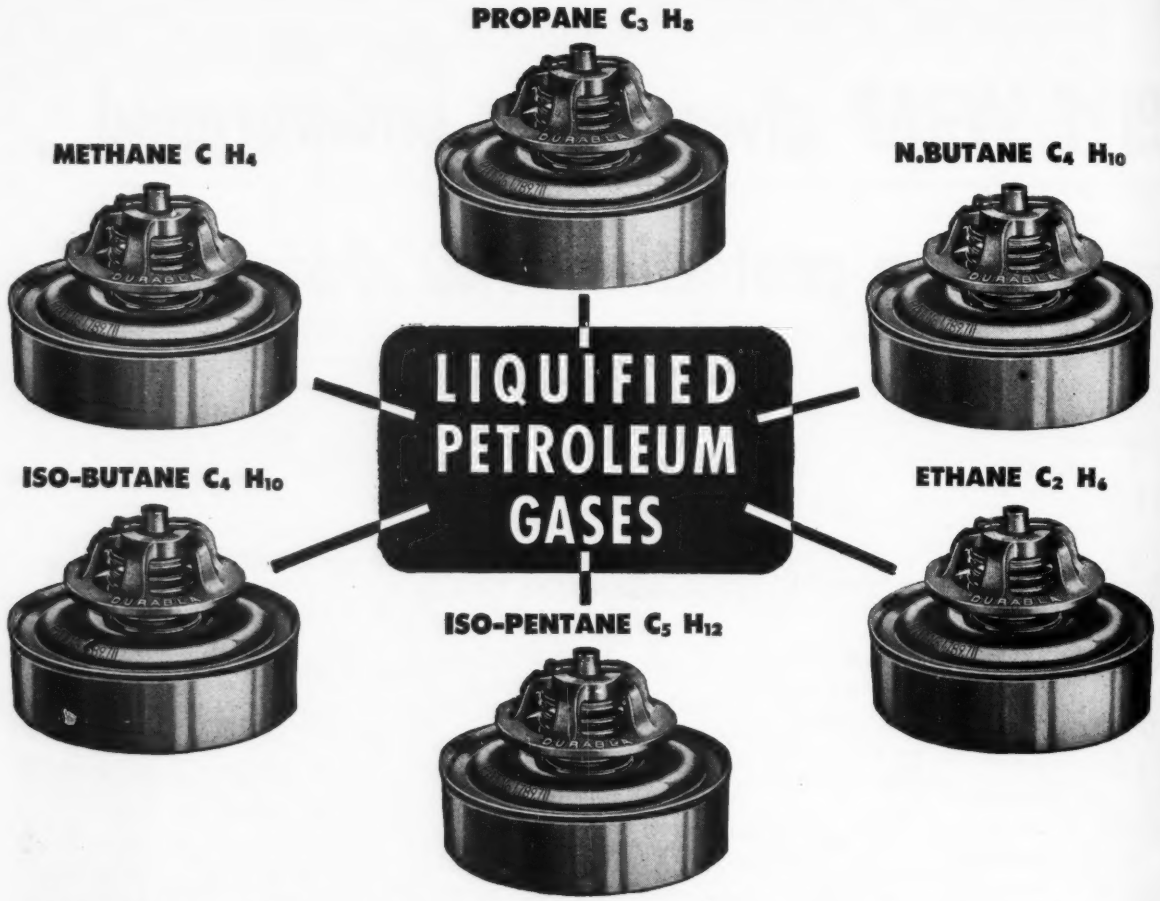

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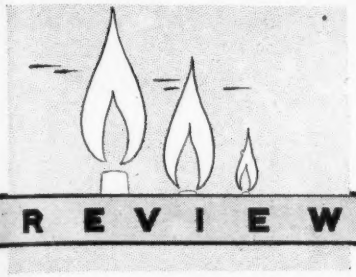
NATURAL GAS



4-Year Natural-Gas Program To Cost Nearly 2 Billion

REVIEW AND FORECAST

by Dahl M. Duff

THE natural-gas industry marked up another year of phenomenal growth in 1948 and is facing the prospects of continued large-scale expansion for at least the next several years.

While the postwar increase in demand for liquid petroleum products has been at a record rate, the demand for natural gas has been even more spectacular. Its market is almost unlimited, and the industry is moving to strengthen and extend the network of interstate transmission lines as fast as pipe availability and other conditions permit.

In 1948, the natural-gas industry, including both transmission and distribution companies, increased its sales 11.4 per cent over 1947. The number of customers served gained 11.4 per cent, and total revenues were up 15.5 per cent.

The increasing stature of the movement and sale of natural gas makes the industry of first-rate importance not only to the economy of the country but also in its relationship to the petroleum industry. Once-wasted gas is becoming a major source of income to oil producers, and the widening system of gas pipe lines is making it possible for the petroleum industry to cooperate with government authorities in halting the flaring of oil-well gas in the field.

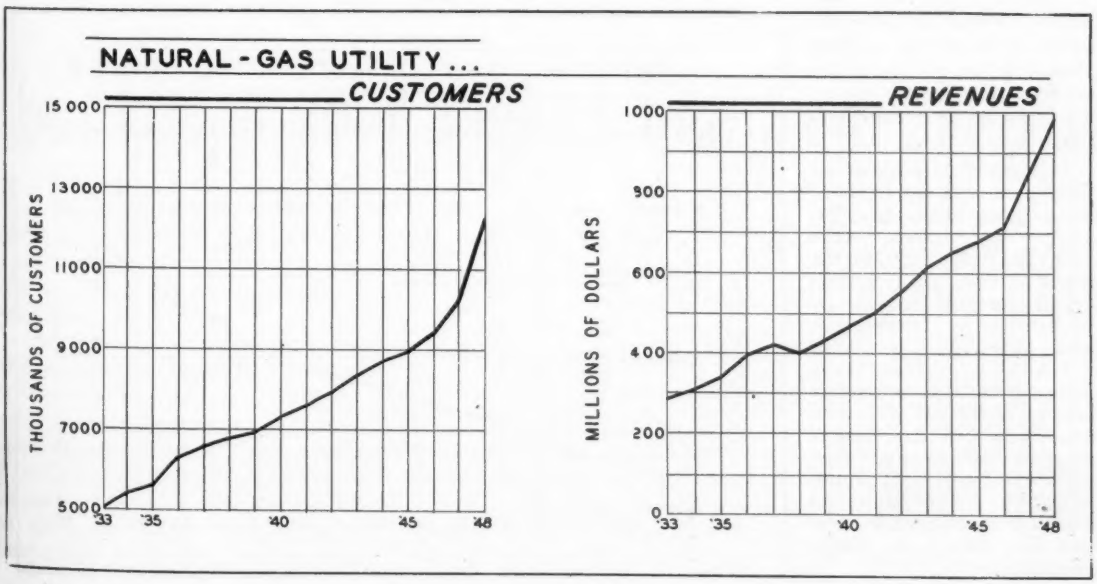
According to the American Gas Association, which follows the statistical position of the industry in detail, more than $675,000,000 was spent on construction in the natural-gas field in 1948. This total exceeded the association's own earlier forecast by some $45,000,000.

The extent of the expansion of the natural-gas industry can be better appreciated when the 1948 construction expenditure total of $675,000,000 is compared to the outlay of $236,750,000 in 1946 and the fact that 10 years ago in 1938 the total construction expenditures of the entire gas industry—natural, manufactured, and mixed gas—was only $79,000,000. The 1948 total represented a slight increase over the 1947 construction expenditure total of $623,612,000.

Vast Construction Program Planned

A survey recently made by the association indicated a total of about $1,900,000,000 will be spent on natural-gas construction over the next 4 years. Estimated annual construction expenditures are: for 1949, $625,000,000; for 1950, $523,000,000; for 1951, $440,000,000; and for 1952, $300,000,000. The major part of these annual outlays goes into the laying of long-distance interstate transmission lines and the construction of such facilities as compressor stations.

The report indicates some leveling off in construction expenditures over the next few years as the industry gradually catches up with work deferred during the war and starts satisfying the tremendous demand for gas service. An official of the American Gas Association explained these and other reasons for the relative average decline in expenditures. Many of the long-distance lines most urgently required should be built by 1951 or 1952, he said, and in addition, there is a natural inability



Laying 24-in. pipe in Kansas for a loop constructed for a program to increase trunk-line capacity for transmitting Panhandle and Hugoton field gas to northern cities

on the part of many companies to foresee their construction expenditures 3 and 4 years ahead.

The large part of the construction expenditure going into long interstate lines is shown by the breakdown of the $623,612,000 spent on natural-gas construction in 1947. Of this sum, $423,537,000 was in the transmission branch, including the $143,127,000 cost of the Big Inch system purchased from the Government; $66,385,000 was in production and storage; $115,185,000 was in distribution, and $18,505,000 listed as general.

Quarter-Million-Mile Schedule

In the 1948 review and 1949 forecast statement of Robert W. Hendee, A.G.A. president and president of Colorado Interstate Gas Co., the total of natural-gas pipe lines now in the United States is given as about 251,330 miles. During the past year the Federal Power Commission authorized the construction of approximately 8,500 additional miles of line.

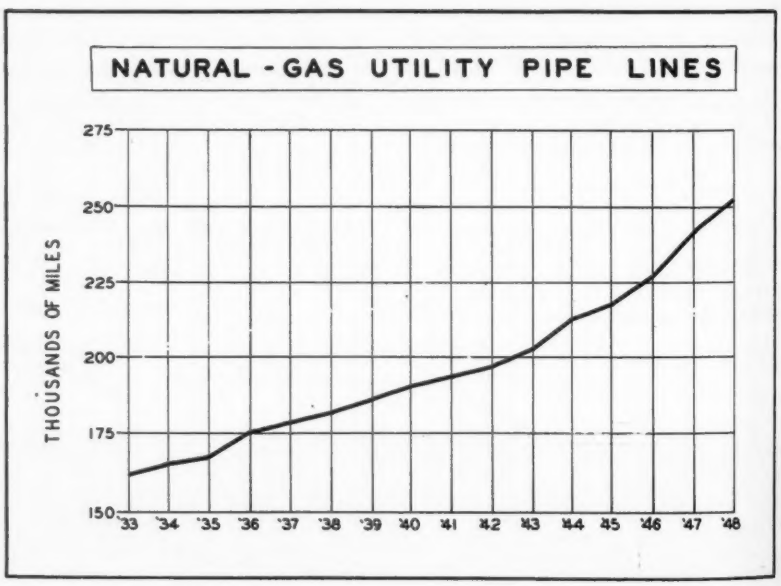
Hendee pointed out that today's natural-gas pipe-line system exceeds the railroad mileage in the nation by 17,000 miles and exceeds the oil pipe lines by more than 100,000 miles.

In addition to projects already approved, applications now pending before the FPC provide an additional 14,600 miles of line. During 1948, the largest single authorization by the commission was for construction by Trans-Continental Gas Pipe Line Co. of an 1,840-mile line from Texas to New York at an estimated cost of $189,000,000. This new line, considered the longest and costliest natural-gas pipe line in the world, will supply 340,000,000 cu. ft. daily to gas-utility companies in New York, New Jersey, and Pennsylvania.

Other important authorizations in 1948, Hendee reported, include those for Texas Eastern Transmission Corp. to add 1,400 miles to its system and the Tennessee Gas Transmission Co. project which includes a 1,387-mile line from Texas to Pittsburgh. As a result of this construction, supplies of natural gas in the territories served by these lines will be increased an estimated 20 per cent.

In common with the petroleum industry, natural-gas-company officials rank the shortage of steel pipe to meet their expansion needs as a No. 1 problem. Hendee reported the steel shortage was being felt particularly in the 24 to 30-in. line sizes.

It is in these large-diameter lines that most of the construction is being undertaken. About 3,675,000 tons of steel will be needed to complete the 14,600 miles for which FPC certificates are pending. This averages out about 250 tons per mile, greater, because of the larger-size pipe being used, than the 1,950,000 tons needed for the 8,500 miles



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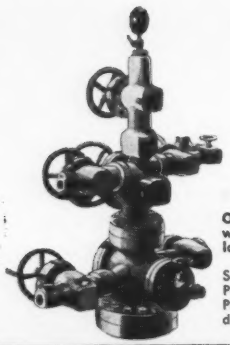

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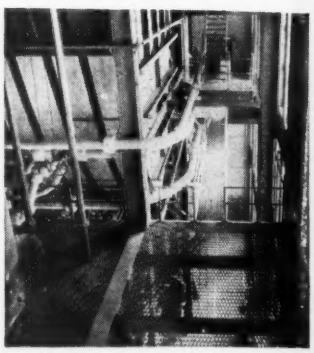

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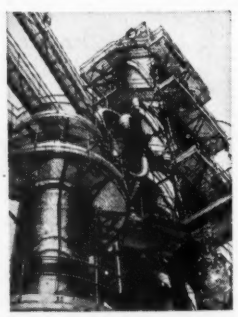

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TABLE 1—NATURAL GAS (PRELIMINARY ESTIMATES)

	1948	1947	Per cent change
Customers:			
Total	12,242,500	10,808,000	+13.3
Residential	11,330,000	10,000,000	+13.3
Commercial	856,600	761,000	+12.6
Industrial	45,300	39,000	+16.2
Other	10,600	8,000	.....
Sales (M.c.f.):			
Total	2,802,079,200	2,515,251,000	+11.4
Residential	881,830,600	740,572,000	+19.1
Commercial	262,071,600	224,295,000	+16.8
Industrial	1,558,652,800	1,467,504,000	+ 6.2
Other	99,524,200	82,880,000	.....
Revenues:			
Total	$980,064,700	$848,316,000	+15.5
Residential	547,416,000	462,828,000	+18.3
Commercial	120,554,100	102,477,000	+17.6
Industrial	295,889,900	269,180,000	+ 9.9
Other	16,204,700	13,831,000	.....

authorized in 1948—an average of about 230 tons per mile.

The concern of the industry over the unavailability of steel pipe to meet requirements was expressed by H. Leigh Whitelaw, managing director of the Gas Appliance Manufacturers Association, at the annual meeting of the Independent Natural Gas Association of America. He pointed out that the average annual production of natural-gas line pipe 20-in. and larger in the period 1936 to 1940 was only 50,000 tons per year. "We have been regulated into a competitive position which would seem to indicate that, if gas remains the cheapest source of energy, I question whether we shall ever be able to supply the demand," he said. "This demand today is far in excess of the steel companies' ability to produce our present yearly requirements."

Problems Facing Expansion

The tonnage required for any long line, Whitelaw continued, is a substantial per cent of the yearly production or line pipe today. As an example, one 26-in. line recently authorized, will require approximately half a million tons of line pipe. This is 10 times the line-pipe requirements of the natural-gas industry per year for the period from 1936 through 1940 and represents one-third of the total 1947 production of line pipe.

The second major problem facing the gas industry is in the regulatory field and concerns renewed efforts to secure passage of the Moore-Rizley bill in Congress to curb what the industry considers an unwarranted and unauthorized assumption of powers by FPC. The measure failed in the Senate last year, and its chances are not regarded as particularly good in the present Congress.

The petroleum industry is virtually unanimous with the natural-gas group in support of this legislation which would define the commission's authority and limit it to regulation of interstate movement of gas. The oil industry's particular interest arises out of court decisions upholding commission regulation of gas production at the well head. Recent reports are that a group of leading gas-company executives are now laying plans to present their case for the legislation if the bill is reintroduced.

Despite shortages of steel pipe, hampering regulatory trends, high costs, and other difficulties, the natural-gas industry since the end of the war has set one record after another in the various phases of its operations. Sales, revenues, and number of customers all showed substantial percentage gains at the end of 1948.

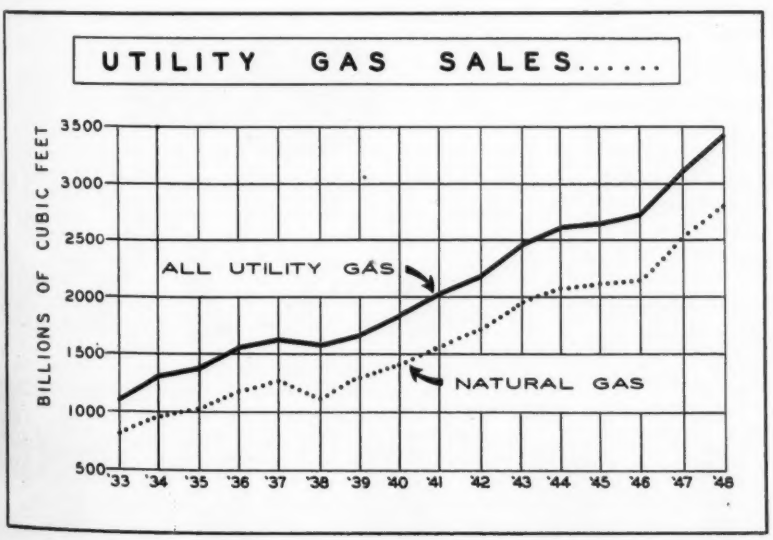
Industry in Favorable Position

Backing up and giving a sound foundation to this expansion is the extremely favorable reserve position of the natural-gas industry. Reserves were estimated at the beginning of 1948 at 165.9 trillion cubic feet, and despite record production of gas in 1948, another large net gain in reserves is expected to be shown in the next report of the A.G.A. reserves committee due in April. The present record exploration and development under way in the oil industry is having as an important auxiliary result the discovery of more and more gas.

The historical trend behind the present growth in the gas industry is shown graphically in the accompanying charts. Table 1, also from A.G.A. data, shows percentage gains of 1948 over 1947 for customers, sales, and revenues.

The total amount of gas shown in the sales tabulation of the A.G.A. is somewhat less than half the entire amount of natural gas produced in the United States. In 1947 utility sales made up about 2.5 trillion cubic feet of the estimated 5.6 trillion cubic feet production. The difference consists of gas used in field operations, in carbon-black plants, and other direct producer sales as well as gas flared. The Texas Railroad Commission is now making a determined effort to end all gas flaring where economically possible to do so, and gas-transmission lines are working with producers to tie all available casing-head production into their lines.

Another important and growing phase of the gas-utility industry is the liquefied petroleum gas business. At the end of 1948 approximately 320,000 customers were receiving L.P.G. directly from utility mains as compared to 233,700 in 1947. In addition, A.G.A. estimates more than 4,500,000 customers are now being served with L.P.G. in territories not served by gas utility mains.



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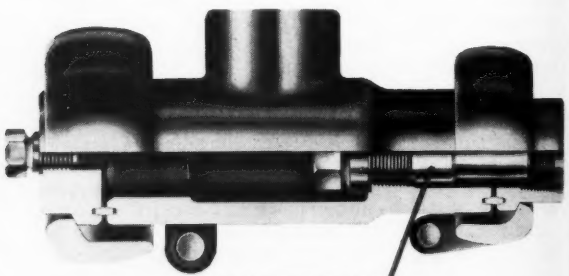

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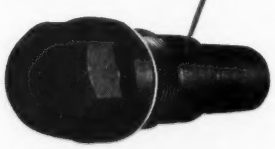

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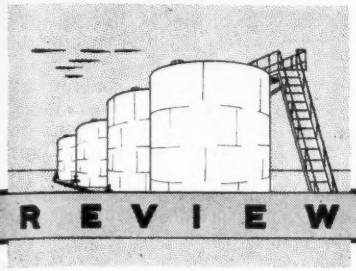


REVIEW AND FORECAST

Production in Foreign Fields Rose To 3¾ Million Barrels in 1948

by Dahl M. Duff

THE accelerated development program carried out since the war in foreign areas resulted in a 1948 daily average production outside the United States some 580,000 bbl. daily greater than 1947.

During 1948, production in foreign fields rose to an estimated 3,775,100 bbl. daily with Venezuela and the Middle East making up 65 per cent of the total.

With the most critical postwar demand problems apparently overcome in 1948 by the record-breaking production abroad, it is generally felt 1949 and subsequent years will see a return to a more normal growth of demand in the 8 to 10 per cent annual range.

Observers in the industry recognize such predictions may go wide of their mark. However, some slackening in the rate of demand increase has already been noted with stocks now largely rebuilt in Europe as well as in the United States. The foreign production potential continues a steep upward trend, but unfavorable political conditions and in some cases inadequate refining and transportation facilities may act as a brake on consumption.

While Canada, Venezuela, and other areas showed marked gains in production in 1948, the Middle East held the center of attention in foreign oil. The Persian Gulf area, with reserves now estimated at upwards of 32,000,000,000 bbl., increased its production by 34 per cent in 1948 and its output may soon equal or surpass that of Venezuela.

Most spectacular rise of production in the Middle East was in Kuwait, where producing operations started from scratch shortly after the war. Kuwait's 1948 daily average is placed at 125,000 bbl., but late in the year this small shiekdom was producing 200,000 bbl. daily from its single Burghan field, now ranked as the world's largest oil reservoir with nearly 11,000,000,000 bbl. reserves.

Eastern Hemisphere Demand Increasing

The impetus for the phenomenal increases in oil production in the Persian Gulf area since the war has come from the rising demand in the Eastern Hemisphere. Venezuelan and other Western Hemisphere oil, formerly the main source of supply for Europe and other Eastern Hemisphere areas, has been flowing in increasing amounts to Western Hemisphere markets, and observers of the international oil trade foresee petroleum self-sufficiency for each hemisphere, except for specialty products, in the not-distant future.

Venezuelan production increased nearly 12 per cent in 1948 to reach 1,330,000 bbl. daily and to hold for that country its place as the world's greatest exporter of oil. Production rose to approximately 1,370,000 bbl. daily in late fall, but this high-level output was cut back because of the weakened market for heavy fuel oil.

Due to the rapid development of Leduc field in Alberta, Canadian production showed an increase of more than 50 per cent over 1947. Daily average during 1948 was approximately 30,500 bbl., and this is expected to at least double in 1949 with further drilling in the Northern Alberta boom area.

Netherlands' war-discovered Schoonebeck field became Western Europe's largest producer and gave the country a 1948 daily average production of 9,500 bbl., not greatly under Germany's 11,500 bbl. daily estimated 1948 production. Output elsewhere in Western Europe continued negligible, although France was carrying out an extensive exploration program in the southern part of the country.

East Indies Production Up

Sharp gains in production were recorded in 1948 in Indonesia, formerly Netherlands East Indies, where 1948 estimated output rose to 84,400 bbl. daily from 22,000 bbl. daily in 1947. Practically all this production is in Sumatra, and unless current fighting in the islands interferes, 1949 production is expected to rise further toward the prewar 157,000-bbl. daily average.

In British Borneo, production increased more than 50 per cent in 1948 and was estimated at 54,500 bbl. daily average during the year. Burma's oil output remained far below prewar, and the unsettled status of the industry in that country contributed to the failure to build back the prewar position.

New Guinea in 1948 became the first of several additional countries expected to join the list of oil-producing areas. An exploration program first undertaken in the mid 1930's finally came to fruition late in 1948 when the first shipment was made from the Vogelkop region. Klamona field is now producing at about 4,000 bbl. daily with Netherlands New Guinea Petroleum Co. the operator.

The year 1949 is expected to see the first sizable commercial production in Turkey. Output is now reported to be about 1,000 bbl. daily. Chile also may begin commercial production in Tierro del Fuego late this year. Potential as a result of drilling since the 1945 discovery is now estimated at about 3,000 bbl. daily, and a pipe line to tidewater is due to be started soon.

Drilling is continuing in the Persian Gulf peninsula of Qatar but producing operations are not expected to commence here until 1950 or later. Oil from this area appears little needed at present since production elsewhere in the Middle East is limited largely by transportation facilities.

Foreign oil in the year ahead faces many problems of both a political and economic nature, but this fact has not prevented a widespread wildcatting program which is now under way in many areas throughout the world where conditions are at all favorable. Over the next 5 years, total investment

of the oil industry, both in the United States and foreign countries, is estimated at approximately 13 billion dollars.

For foreign operations, a sizable part of this sum will go into the Middle East area where primary exploration and production expenses are outweighed by the tremendous outlays required for such auxiliary facilities as housing, camps, and pipe lines.

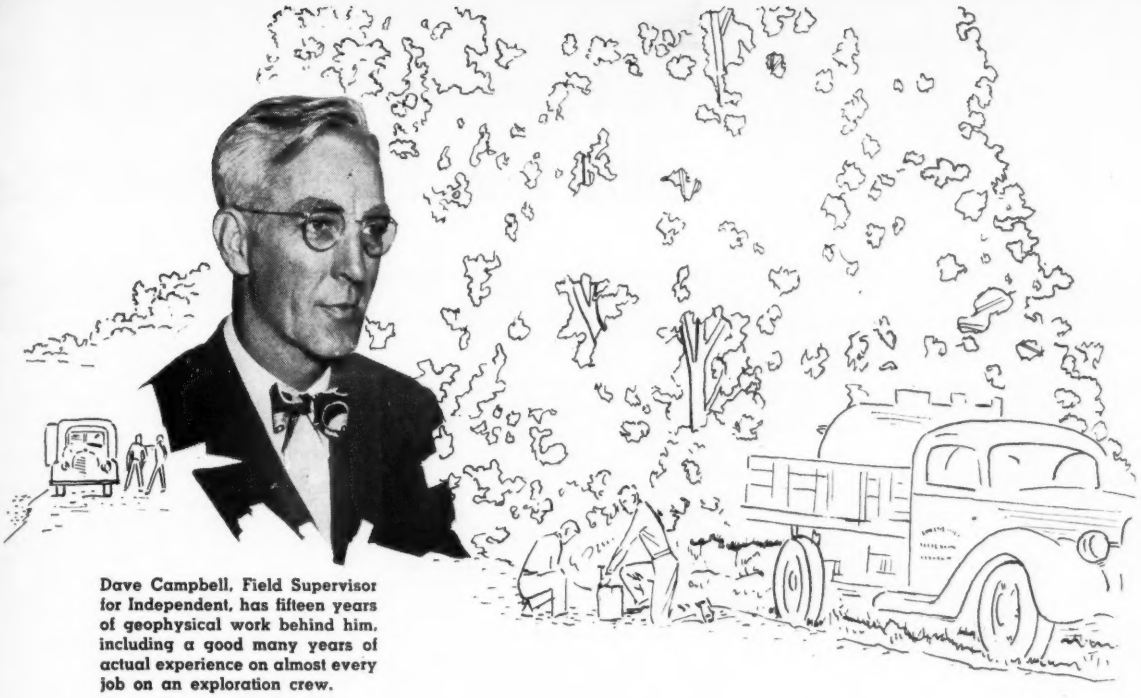
In the Middle East, the Arab-Israeli fighting has resulted in serious repercussions. Iraq's production has been reduced to about half of normal as a result of the closing of the Haifa pipe line. Wildcatting in southern Palestine is at a standstill.

Pipe lines remain the major Middle East problem, and the failure of the United States Government to grant pipe export licenses for the Trans-Arabian line has thrown back by possibly a year the construction schedule not only of the Tapline but of the several other Persian Gulf-Mediterranean lines planned.

A much-eased tanker availability in the latter part of 1948 contributed to production increases in the Middle East and elsewhere. Increased carrying capacity equivalent to 171 T-2 tankers is estimated available this winter from new construction, from laid-up status, and from increased efficiency of operation. An additional 350 T-2 equivalent tankers are building or are now on order.

WORLD CRUDE OIL PRODUCTION
(Annual average in thousands of barrels daily)

Country—	1928	1938	1947	Est. 1948	Percentage increase, 1948 over 1928	Percentage increase, 1948 over 1938	Percentage increase, 1948 over 1947
Argentina	24.8	46.8	59.9	63.5	156.0	35.6	6.0
Bolivia	.....	0.6	1.3	1.3	.....	116.6	.....
Brazil	.....	.....	0.3	0.3	.....	.....	.....
Canada	1.7	19.1	20.1	30.5	1,697.0	59.7	51.8
Colombia	54.3	59.1	68.1	62.0	14.2	4.9	—8.9
Cuba	.....	.....	0.7	0.7	.....	.....	.....
Ecuador	3.0	6.2	6.6	7.4	147.3	19.4	12.1
Mexico	137.2	105.5	153.8	160.0	16.6	51.7	4.0
Peru	32.9	43.4	34.9	38.0	15.5	—12.5	8.9
Trinidad	21.0	48.6	55.7	56.0	166.8	15.2	0.5
Venezuela	288.9	515.5	1,190.8	1,330.0	361.0	158.1	11.7
Total W. Hemis., less U. S.	563.8	844.8	1,592.2	1,749.7	210.3	107.2	9.9
France	1.4	1.4	1.0	1.1	—21.4	—21.4	10.0
Germany	1.7	10.6	11.0	11.5	578.0	8.5	4.5
Italy	0.1	0.3	0.2	0.2	100.0	—33.3	.....
Netherlands	.....	.....	4.0	9.5	.....	.....	137.8
Egypt	5.0	4.3	25.5	35.0	600.0	714.0	37.3
United Kingdom	.....	.....	1.0	0.9	.....	.....	—10.0
Total, W. Europe, Africa	8.2	16.6	42.7	58.2	610.0	250.1	36.3
Bahrein	.....	22.7	25.8	30.0	.....	32.2	16.3
Iran	118.7	214.7	422.0	510.0	330.0	137.5	20.9
Iraq	2.0	89.4	99.2	68.0	3,300.0	—24.0	—31.5
Kuwait	.....	.....	44.5	125.0	.....	.....	180.8
Saudi Arabia	.....	1.4	246.2	390.0	.....	27,800.0	58.3
Total, Middle East	120.7	328.2	837.7	1,123.0	830.4	242.2	34.1
British Borneo	14.3	18.9	36.1	54.5	287.0	188.5	51.0
Burma	23.9	20.7	0.6	0.5	—98.0	—97.5	—16.7
China	.....	.....	1.1	1.8	.....	.....	63.7
India	.....	6.8	6.1	6.5	.....	—4.4	6.6
Indonesia	87.8	157.0	22.0	84.4	—3.9	—46.2	283.5
Japan	5.3	6.9	3.6	3.3	—37.7	—52.1	—8.4
Total, Far East	131.3	210.3	69.5	151.0	15.0	—28.2	117.3
Total foreign, less Russia and Eastern Europe	824.0	1,399.9	2,542.1	3,081.9	274.0	120.2	21.2
Albania	.....	2.1	1.0	1.0	.....	—52.4	.....
Austria	.....	1.0	15.9	20.0	.....	1,900.0	25.8
Czechoslovakia	0.3	0.4	0.6	0.4	33.3	.....	—33.3
Hungary	.....	0.8	11.9	10.0	.....	1,150.0	—16.0
Poland	15.0	10.3	2.6	2.7	—82.0	—74.0	3.8
Romania	84.0	132.8	78.0	78.0	—7.2	—41.4	.....
Russia	233.5	561.5	543.0	580.0	148.4	3.3	6.8
Yugoslavia	.....	.....	1.0	1.1	.....	.....	10.0
Total Russia, E. Europe	332.8	708.9	654.0	693.2	108.5	—2.2	6.0
Total foreign	1,156.8	2,108.8	3,196.1	3,775.1	226.3	79.0	18.1



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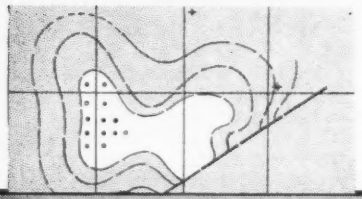

Field Name, County, Location, and Initial Production of Discovery Wells

REVIEW AND FORECAST

TEXAS GULF COAST

District 2

NEW POOLS

ANAQUA—Victoria, July; Baldridge & King et al 1 May Ward Williams, S Serna grant, A-106, 2,840 ft. southeast of Gulf's 1 Simmons gas discovery well, TD 5,533 ft., perforations 5,529-33 ft., IP 88 bbl., 8/64-in. choke, gravity 33.4°, no water.

BAKER—Victoria, April; Cities Service Oil Co. 1 Mrs. S. H. Baker, Valentin Garcia grant, 3 miles southeast of Inez and 4½ miles north of North Keeran field, Frio sand, TD 6,816 ft., perforations 5,240-49 ft., IP 7,400,000 cu. ft. gas on open flow, shut-in pressure 2,180 psi., no water.

CHARCO—Goliad, January; W. C. McBride, Inc. et al 1-B W. A. Stockton, Victor Blanco grant, A-7, 2 miles southwest of Charco and 3 miles north-northeast of Hord's Creek field, Yegua zone, TD 8,511 ft., perforations 4,590-95 ft., IP 33 bbl., ½-in. choke, gravity 48.6°, no water.

COTTONWOOD CREEK—DeWitt, August; Pan American Prod. Co. 1 Paul Lang (oil discovery well in Cottonwood Creek field), James Duff League, 3 miles northwest of Meyersville and 2 miles northeast of Holly field discovery, Massive sand, TD 7,784 ft., perforations 7,625-26 ft., IP 35 bbl., 7/64-in. choke, gravity 35.6°, 5½ per cent water.

EAST FLORESVILLE—Wilson, September; Sunray Oil Corp. 1 B. B. Hardy, Jos. Reynolds Survey 272, 7 miles northeast of Floresville, Midway, TD 2,749 ft., open hole 2,727-49 ft., IP 72 bbl. on pump, shut-in pressure 325 psi., gravity 21.8°.

GOTTSCHALT—Goliad, May; W. L. Goldston et al 1 August F. Gottschalt, Alfred Berry Survey, A-59, ¼ mile east of Weesatche townsite, 2½ miles southwest of Brandt field, 2½ miles west-southwest of Weser field, and 4½ miles east of Slick-Wilcox field, duel completion, TD 8,100 ft., perforations 7,676-82 ft., Mackhank sand, IP 138 bbl., ½-in. choke, gravity 34.7°, no water; Luling sand, perforations 7606-12 ft., IP 8,000,000 cu. ft. gas on open flow with condensate, shut-in pressure 2,300 psi., no water.

HOLLY—DeWitt, January; Holly Development Co. 1 Geo. Stanchos, James Kelly Survey, A-285, 4½ miles west-northwest of Meyersville, 12 miles southwest of Cuero, and just north of north corner of Goliad County, 9½ miles northeast of Slick-Wilcox field, TD 7,615 ft., perforations 7,610-13 ft., Wilcox sand, IP 165 bbl., ½-in. choke, gravity 35.2°, no water.

HOLZMARK-WILCOX—Bee, June; Gasoline Prod. Corp. 1 Holzmark estate, Thomas P. Rhodes Survey, A-397, 1 mile southwest of South Mineral field, 2 miles southwest of Yoward field, and 5 miles south of Mineral, TD 8,130 ft., perforations 8,108-14 ft., Wilcox, IP 108 bbl., 5/32-in. choke, gravity 27.6°, no water.

LA BAHIA—Goliad, May; Overton Refining Co., Inc. 1 S. E. Cole, Goliad town grant, 1½ miles south of Goliad and just southwest of La Bahia, TD 5,566 ft., open hole 5,550-66 ft., IP 4 bbl., ¼-in. choke, gravity 41.7°, no water.

LONG MOTT, EAST—Calhoun, February; C. G. Glasscock, Jr. and Pontiac Refining Co. 1 T. A. McDonald, Section 19, R. Garrett Subdivision 1, I&GN Survey 6, 7 miles southwest of Port Lavaca and 4 miles south-southeast of Sheriff field, TD 7,304 ft., perforations 7,268-69 ft., IP 112 bbl., ⅛-in. choke, gravity 41.2°, no water.

MARSHALL—Goliad, May; Sunray Oil Corp. 1 Fannie O. Marshall, William Millican Survey, 5.8 miles southwest of Weesatche, 6½ miles north-northwest of Goliad, and 2½ miles east southeast of Poehler field, Luling sand, TD 9,240 ft., perforations 8,730-45 ft. IP 518 bbl. condensate, ⅜-in. choke, gas-condensate ratio 9,850, shut-in pressure 2,905 psi., no water.

MELROSE—Goliad, September; Atlantic Refining Co. B-1 G. M. & A. Bluntzer, James Cunningham Survey, 11 miles northwest of Goliad, approximately 1 mile north of Poehler field, TD 9,015 ft., perforations 9,845-60 ft., IP 1,150,000 cu. ft. gas on open flow, shut-in pressure 2,750 psi., gravity 59°, ratio 60,000.

PAULDING—Lavaca, September; Great Lakes Carbon Corp. 1 M. C. Oldham, Wm. Paulding Survey, Abstract 368, ½ mile west-southwest of West Garwood field of Colorado County, Frio, TD 10,056 ft., perforations 3,118-24 ft., IP 3,500,000 cu. ft. gas, ¼-in. choke.

REKLAW (HART)—Wilson, January; W. C. McBride, Inc., 1-A C. E. Hart, Simon & Juana Arocha heirs grant, 3 miles east of Floresville and 1½ miles northeast of Floresville field, TD 592 ft., perforations 586-88 ft., Reklaw sand, IP 19 bbl. on pump, no gas, gravity 16.8°.

RIVERDALE—Goliad, November; Amerada Petroleum Corp. 1 R. F. Irby, M. J. Ybarbo Grant, 9 miles west of Goliad townsite, top pay 9,242 ft., TD 9,756 ft., perforations 9,242-58 ft., IP 2,333,000 cu. ft. gas and 61 bbl. condensate, 5/32-in. choke, gravity 49.2°.

SANDY CREEK—Jackson, January; Rock Hill Oil Co. 1 J. M. Halamicek, in S. C. A. Rogers, 2 miles west of Ganado and ½ mile northwest of West Ganado field, TD 5,610 ft., perforations 4,560-64 ft., IP 108 bbl., ⅛-in. choke, gravity 25°, no water.

SOUTH BLANCONIA—Bee, May; S. R. Chamberlain 1 H. C. Wood, Jose Maria Castillo Survey, 10 miles west of Refugio, (retest of old well, originally completed in 1945 as a gas well), TD 5,318 ft., perforations 5,239-45 ft., Vicksburg sand, IP 99 bbl., 5/32-in. choke, gravity 30.6°, no water.

UNNAMED—Bee, November; Rudco Oil & Gas and Rock Hill Oil Co. 2 C. P. Sparkman, Asa Walker Survey, 1 mile northeast of Mineral, TD 7,608 ft., top pay 7,554 ft., Massive Wilcox, perforations 7,554-62 ft., IP 20,000,000 cu. ft. gas on open flow.

UNNAMED—DeWitt, November; Western Natural Gas Co. 1 Ed Zengerlie et al, James Quinn Survey, 3 miles southeast of Arneckville, top pay 8,158 ft., TD 8,702 ft., perforations 8,158-68 ft., IP 3,000,000 cu. ft. gas, ¼-in. choke, plus 95 bbl. condensate.

UNNAMED—Jackson, April; Humble Oil & Refining Co. D-2 Four-Way Ranch, Lot 86, First Registered subdivision, La Ward farms, I&GN Survey 12, 3 miles east-northeast of Lolita and 1 mile east-northeast of Lolita field, TD 8,710 ft., perforations 5,824-29 ft., IP 220 bbl., 5/32-in. choke, gravity 33.1°, 0.1 per cent water.

UNNAMED—Lavaca, May; Union Producing Co. 1-A Wm. Borchers, William Hosford Survey, 3,055 ft. east-northeast of Lavaca River, 20 miles southeast of Yoakum, 2 miles northwest of Jackson-Lavaca county line, TD 11,207 ft., perforations 2,030-40 ft., IP 5,000,000 cu. ft. dry gas on open flow, shut-in pressure 865 psi., no water.

UNNAMED—Live Oak, August; Continental Oil Co. 1 Clay West and Burns Christenson, Willis S. Novell Survey 58, 4,950 ft. northeast of discovery well at "Kittie Burns" field, TD 10,313 ft., perforations 7,170-84 ft., IP 560,000 cu. ft. gas on open flow, gas-condensate ratio 88,000, shut-in pressure 1,300 psi., condensate gravity 55°, no water. No gage on condensate.

UNNAMED—Live Oak, September; Western Natural Gas Co. 1 Clayton, D. R. Fant, Jr., Survey 248, 10 miles west of George West and 6 miles southwest of Kittie West field, Massive Wilcox, TD 7,150 ft., perforations 6,960-95 ft., IP 100,000,000 cu. ft. gas on open flow, ratio 44,000, flowed 70 bbl. condensate and 2,800,000 cu. ft. gas, ¼-in. choke, shut-in pressure 2,550 psi.

UNNAMED—Live Oak, November; Magnolia Petroleum Co. 1 Maxine Means, Simmons farm, ACH&B Sur., 157, 7 miles south of Simmons City, 3½ miles east of San Caja field, TD 9,022 ft., top pay 8,820 ft., perforations 8,820-25 ft., IP 5,000,000 cu. ft. gas on open flow. Shut-in pressure 4,055 psi.

UNNAMED—Victoria, June; Taylor Refining Co. 1 Meta Hanselmann, Block 102, Allison-Richey Land Co. subdivision, Charles Grenor Survey, A-173, 1½ miles northwest of Marcado Creek gas field and 2½ miles southwest of Telferner, original total depth 5,670 ft., total depth in sidetracked hole 4,743 ft., perforations 4,678-84 ft., IP (gas well), no gage.

UNNAMED—Victoria, July; Danciger Oil & Refining Co. 1 J. W. Baass, F. G. Hidalgo grant, A-61, 1 mile south of Coletto Creek field, 3½ miles southeast of Raisin, TD 5,188 ft., perforations 4,618-20 ft., IP 38,900,000 cu. ft. gas on open flow, shut-in pressure 1,905 psi., no water.

UNNAMED—Victoria, November; Woodley Petroleum Co. 1 Geo. A. Musselman, W. W. Nichols Survey, 6 miles northwest of Inez and 1 mile southeast of Texas Co. 1 Scott discovery gas well at "Salem" field, top pay 2,266 ft., TD 5,502 ft., perforations 2,266-76 ft., IP 3,150,000 cu. ft. gas on open flow, shut-in pressure 900 psi.

UNNAMED—Victoria, November; Fidelity Oil & Royalty Co. 1 W. H. Reeves, 2 miles south-southwest of Raisin, J. M. Cobarrubias Grant, TD 5,627 ft., top pay 4,010 ft. Frio sand, perforations 4,010-20 ft., IP 64,000,000 cu. ft. gas on open flow, shut-in pressure 1,698 psi.

WEST WEESATCHE—Goliad, November; H. R. Smith & W. C. McBride, Inc., 1 Carl Weise, R. E. Handy Survey, Abstract 150, 3 miles southwest of Weesatche and 1½ miles northeast of Melrose field, top pay 7,843 ft., Slick sand, TD 8,295 ft., perforations 7,843-58 ft., IP 12,800,000 cu. ft. gas on open flow, shut-in pressure 2,605 psi., gravity 65°.

NEW PAYS

BOYCE—Goliad, March; Sun Oil Co. 2 A. M. Albrecht, Vicente Ramos grant, Pettus sand, TD 4,272 ft., perforations 4,245-50

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ft., IP 77 bbl., 7/32-in. choke, gravity 45°.

BRANDT—Goliad, February; Sun Oil Co. 1 Robert F. Goehring et al, A. Mancha Survey, 3 miles northeast of Weesache and 1½ miles northwest of Weser field, Pettus sand, TD 7,725 ft., perforations 4,707-20 ft., IP 101 bbl., ⅛-in. choke, gravity 45°.

BRANDT—Goliad, February; Sun Oil Co. 1 Robert F. Goehring et al, A. Mancha Survey, 3 miles northeast of Weesache and 1½ miles northwest of Weser field, Pettus sand, TD 7,725 ft., perforations 4,707-20 ft., IP 101 bbl., ⅛-in. choke, gravity 45°.

BRANDT—Goliad, October; Sunray Oil Corp. 4 W. F. Albrecht, Thos. Hancock Survey, A-142, Mackhank sand, TD 7,758 ft., perforations 7,735-742 ft., IP 107 bbl., ¾-in. choke, gravity 33.3°.

CHAPA—Live Oak, April; Continental Oil Co. 4 Somerset Land & Cattle Co., T.T. RR Survey 319, 15 miles southwest of George West, perforations 9,160-9,200 ft., TD 10,356 ft., IP 4,180,000 cu. ft. gas and 120 bbl. condensate, 7/32-in. choke, gravity 55°, shut-in pressure 5,000 psi.

FAGAN—Refugio, January; C. L. Norsworthy, Jr., et al 1-B C. T. Holeman, Michael Reilly Survey, TD 6,035 ft., perforations 2,354-63 ft., IP 14,500,000 cu. ft. dry gas on open flow, shut-in pressure 1,015 psi.

FRANCITAS—Jackson, October; McKay Donkin & Lloyd H. Smith 1 Lovett estate, Patrick Green Survey, 4,000 ft. northeast of old production at Francitas field, Upper Kopnicky sand, TD 7,953 ft., open hole 7,947-53 ft., IP 120 bbl., ⅛-in. choke, gravity 41.4°.

GANADO DEEP — Jackson, April; The Texas Co. 11 Mortgage Land & Investment Co., Morris & Cummings Survey 3, TD 7,678 ft., perforations 6,426-29 ft., IP 86 bbl., 7/64-in. choke, gravity 37.6°.

GOTTSCHALT—Goliad, June; W. L. Goldston, 1 Mary Meyer, St. Luke de Mott Survey, Abstract 115, ¼ mile southwest of Weesatche and approximately ¾ mile southwest of 1 Gottschalt discovery well, TD 7,880 ft., Massive Wilcox sand, perforations 7,683-89 ft., IP 120 bbl., ⅛-in. choke, gravity 34.6°.

GOTTSCHALT—Goliad, August; W. L. Goldston 2 Mary Meyer, in Luke de Mott Survey, ½ mile southwest of Weesatche townsite, Reklaw sand, TD 7,705 ft., perforations 7,316-7,324 ft., IP 1,500,000 cu. ft. gas, ⅛-in. choke, shut-in pressure 3,000 psi.

HARRIS—Live Oak, January; Continental Oil Co. 1-A Frank C. Goodwin, Juan Giminez Survey, approximately 1½ miles northnortheast of George West townsite, TD 8,750 ft., perforations 8,588-8,610 ft. and 8,627-37 ft., Wilcox sand, IP 28 bbl. condensate and 2,946,000 cu. ft. gas, 9/64-in. choke, gravity 46.2°.

HORD'S CREEK—Goliad, January; Brown & Wheeler 1-A J. R. Kauffman, P. Trevino grant, OWDD, OTD 4,544 ft., new TD 5,148 ft., Cook Mountain, perforations 5,062-72 ft., IP 133 bbl., ⅛-in. choke, gravity 48°.

HORD'S CREEK—Goliad, January; Brown & Wheeler D-1-W J. R. Kauffman, P. Trevino grant, Massive sand, TD 8,620 ft., perforations 8,395-98 ft., IP 40,000,000 cu. ft. gas on open flow, ratio 250,000, shut-in pressure 2,950 psi.

HORD'S CREEK—Goliad, August; Brown & Wheeler D-6 J. R. Kauffman, Pedro Trevino grant, ½ mile northeast of the 5,050-ft. production, TD 4,960 ft., perforations 4,919-23 ft., IP 130 bbl., 10/64-in. choke, gravity 47°.

LITTLE KENTUCKY — Jackson, November; W. L. Pickens 3 John Kramer, Morris & Cummings Survey 34, top pay 5,792 ft., TD 6,017 ft., perforations 5,792-98 ft., IP 500,000 cu. ft. gas, 9/64-in. choke.

LOLITA-DEEP—Jackson, May; Humble Oil & Refining Co. D-3 Four-Way ranch, I&GN Survey, TD 8,020 ft., perforations 7,556-64 ft., IP 134 bbl., ⅛-in. choke, gravity 44°.

LONG MOTT—Calhoun, June; Fullerton Oil Co. & Ryan Consolidated Petroleum 1 Carrie McDonald, Miguel Castillo grant, TD 10,495 ft., perforations 9,634-52 ft., IP 4,000,000 cu. ft. gas and 170 bbl. condensate, ¼-in. choke, ratio 23,530, gravity 55.4°.

LONG MOTT, EAST—Calhoun, June; C. G. Glasscock & Pontiac Refining Co. 2 T. A. McDonald, John P. Tilley Survey, 7 miles southwest of Port Lavaca, dual completion; TD 7,563 ft., perforations 7,214-38 ft., perforations 7,072-78 ft., IP 120 bbl., 9/64-in. choke, gravity 41°.

MATAGORDA BAY—Calhoun, September; Salt Dome Oil Corp. 1 State of Texas, Section 95, State tract 95, Matagorda Bay, ¾ mile west of oil production at Matagorda Bay field, TD 5,000 ft., perforations 4,398-4,426 ft., IP 12,500,000 cu. ft. gas on open flow.

NORDHEIM—DeWitt, January; Wescol Oil & Gas Co. 3 F. G. Gips, Willis A. Moore Survey, TD 8,400 ft., perforations 7,350-64 ft., IP 43,000,000 cu. ft. gas on open flow, ratio 50,000, shut-in pressure 2,500 psi.

NORTH LAROSA—Refugio, January; Phillips Petroleum Co. 2 J. G. Toland, Johnson & Pugh subdivision, Bonnie View ranch, Guadalupe C. Cobian grant, dual completion, TD 6,280 ft., perforations 5,616-24 ft., new sand, IP 971,000 cu. ft. gas and 29 bbl. condensate, 3/16-in. choke; perforations 5,835-42 ft., IP 42 bbl. condensate and 1,180,000 cu. ft. gas, ¼-in. choke, tubing pressure 2,025 psi.

PRIDHAM LAKE, WEST—Victoria, January; Rock Hill Oil Co. et al 1 Johanna Vogt, Rafael Manchola grant, TD 5,025 ft., perforations 4,342-45 ft., IP 91 bbl., ⅛-in. choke, gravity 25°.

REFUGIO-FOX—Refugio, April; La Gloria Corp. & Skelly Oil Co. 4-A Jamie Hynes, 3 miles north of Refugio, John Malone Survey, TD 6,964 ft., perforations 5,295-5,319 ft., IP 6,000,000 cu. ft. gas on open flow, shut-in. pressure 2,120 psi.

REFUGIO-FOX—Refugio, May; Seaboard Oil Co. of Delaware A-1 Jamie Hynes, Refugio town tract, TD 7,020 ft., perforations 6,397-6,407 ft., IP 138 bbl., ⅛-in. choke, gravity 37.3°.

REFUGIO-FOX—Refugio, July; Union Producing Co. A-7 Mary F. Lambert, T. C. Lambert & W. H. Allen Survey, TD 7,010 ft., perforations 1,720-25 ft., IP 10,400,000 cu. ft. gas on open flow, shut-in pressure 706 psi.

SOUTH INEZ—Victoria, June; Cities Service Oil Co. 2 Mrs. S. H. Baker, Valentin Garcia Survey, 4 miles southeast of Inez, TD 6,259 ft., perforations 5,116-30 ft., IP 93,000,000 cu. ft. gas on open flow.

WEST VIDAURI—Refugio, September; P. R. Rutherford 6 J. F. Welder heirs, Joseph Farley Survey, TD 5,119 ft., perforations 4,530-41 ft., IP 37,500,000 cu. ft. gas on open flow, very little condensate, shut-in pressure 2,083 psi., no water.

TEXAS GULF COAST

(District 3)

NEW POOLS

ALLEN—Wharton, September; Lloyd H. Smith and McKay Donkin 1 J. C. Allen, Mark Weiss Survey, Section 22, 5 miles south-southeast of Pierce townsite, approximately 1½ miles west of Withers production, TD 7,308 ft., Lower Frio, perforations 7,189-91 ft., IP 171 bbl., 9/64-in. choke, gravity 46°.

ARCH—Matagorda, August; Rowan Drilling Co. and Texas Gulf Producing Co. 1 Guy F. Stovall et al, I&GN Survey, Section 18, A-278, 3 miles northwest of Midfield townsite, approximately 5 miles north of Midfield production, TD 8,760 ft., Frio, perforations 6,364-66 ft., IP 126 bbl., ⅛-in. choke, gravity 37.1°.

BAILEY'S PRAIRIE — Brazoria, March; Pan American Production Co. 1 Mordello S. Munson, H. T. & B. Survey 1, 2 miles east of Bailey's Prairie condensate field production, TD 11,956 ft., perforations 10,854-880 ft., IP 102 bbl., gravity 43.3°, tubing pressure 3,600 psi.

BUNA—Jasper, November; Placid Oil Co. 1 J. S. Richardson Heirs, Wm. Weiss Survey, 3½ miles west of Bessmay, TD 8,350 ft., top pay 7,459 ft., perforations 7,459-69 ft. and 7,477-82 ft., Yegua sand, IP 154 bbl., 10/64-in. choke, gravity 45°.

CLINTON EAST FLANK—Harris, August; F. M. Corzelius 1 J. J. Oates, Reels & Trobough Survey, A-59, TD 7,503 ft., perforations 6,541-50 ft., IP 166 bbl., ⅛-in. choke, gravity 37.5°.

COTTONWOOD, NORTH—Liberty, August; William Hebert Hunt estate, 1 Welch & Silva, in T. & N. O. Survey, Section 11, 2 miles north of Cottonwood field production, TD 8,296 ft., perforations 7,908-26 ft., IP 3,160,000 cu. ft. gas and 77 bbl. condensate, ¼-in. choke, gravity 58°.

DAY—Madison, July; Sun Oil Co. 3 G. P. Day, in John Crownover Survey, 2 miles west of Madisonville, TD 2,466 ft., perforations 1,903-08 ft., Wilcox sand, IP 42 bbl. on pump, gravity 25.4°.

DAYTON, SOUTH — Liberty, December; Gulf Oil Corp. 1 Sidney A. Smith, Wm. D. Smith Survey, 1 mile off south flank of South Liberty dome, TD 9,935 ft., top sand 8,562 ft., perforations 8,562-8,600 ft., IP 254 bbl., 9/64-in. choke, gravity 38.9°.

DURKEE AREA—Harris, October; Union Producing Co. et al 1 Robert Gillespie et al, S. Contreros Survey, Abstract 220, 2½ miles east of North Houston field production, TD 8,000 ft., perforations 7,696-7,710 ft., IP 2,993,000 cu. ft. gas and 45 bbl. condensate, through ¼-in. choke, ratio 66,357, tubing pressure shut-in 2,801 psi.

EGYPT-DEEP—Wharton, March; Claud B. Hamill 1 F. B. & D. Duncan, Alex Edgar Survey, ¾ mile north of shallow gas production, Discorbis Yegua, perforations 6,720-46 ft., IP 100 bbl. condensate and 3,085,000 cu. ft. gas, ¼-in. choke, shut-in pressure 2,419 psi., gravity 61.1°.

GIST, SOUTH—Newton, August; Houston Oil Co. of Texas 1 Newton County Lumber Co., J. Hardin Survey, 1¾ miles south of Gist field production, TD 7,707 ft., perforations 7,556-80 ft., IP 4,103,000 cu. ft. gas and 19.65 bbl. condensate, ¼-in. choke.

GLENDALE, NORTHWEST—Trinity, September; Humble Oil & Refining Co. 1 Thompson Brothers Mineral Corp. et al, John Chambliss Survey, 5¼ miles northwest of Glendale townsite and 8 miles westnorthwest of Glendale discovery production, TD 12,005 ft., perforations 10,246-286 ft., and 10,310-320 ft., IP 2,690,000 cu. ft. gas and 51 bbl. condensate, ¼-in. choke, ratio 53,000.

HILDEBRANTS BAYOU—Jefferson, June; James F. Morse & Co., 1 Wallace Talbot, Jas. McNabb Survey, Block 2, 6,400 ft. south of Lovells Lake field production, TD 9,508 ft., perforations 7,759-61 ft., IP 168 bbl., 8/64-in. choke, gravity 39.4°.

HILLISTER, EAST — Tyler, November; Humble Oil & Refining Co. 1 Wm. Rice Institute, Arthur Hutchins Survey, 8.1 miles northeast of Warren townsite, TD 10,000 ft., top sand 8,260 ft., perforations 8,260-70 ft., IP 2,080,000 cu. ft. gas, ⅝-in. choke, and 78 bbl. condensate, gravity 59°.

KUHLMAN—Harris, August; Lamar Hunt Trust, estate, 1 E. L. Kuhlman, Fred Limsky Survey, A-512, 1¼ miles northwest of Spring townsite and approximately 8,500 ft. northwest of Spring field production, TD 7,314 ft., perforations 5,875-79 ft., IP 41 bbl., 5/32-in. choke, gravity 38°.

LANE CITY TOWNSITE—Wharton, June; Sohio Petroleum Co. 1 Lane City Townsite unit, D. D. D. Baker Survey, 3 miles northeast of Lane City pool production, TD 6,282 ft., perforations 5,464-78 ft., IP 207 bbl., 10/64-in. choke, gravity 25.9°.

LOUISE, WEST—Wharton, October; Sam G. Harrison 2 H. P. Stockton, IRR Co. Survey, Abstract 260, ½ mile northwest of Louise townsite, TD 4,086 ft., top sand 4,075 ft., perforations 4,077-80 ft., IP 36 bbl., 5/64-in. choke, gravity 24.1°.

MACH—Wharton, July; Lloyd Smith and McKay Donkin 1 Joe Mach, E.T.R.R. Survey, Section 25, A-150, 3 miles southeast of El Campo townsite, TD 7,132 ft., perforations 6,775-6,834 ft., Frio sand, IP 3,245,000 cu. ft. gas, ¼-in. choke, shut-in pressure 2,684 psi.

ORANGE, NORTH—Orange, July; Placid Oil Co. 1 William Winfree, C. West Survey, 1 mile off Northeast flank of Orange dome, TD 8,095 ft., Lower Frio, perforations at 7,710-15 ft., IP 321 bbl., 10/64-in. choke, gravity 42°.

RANKIN—Harris, April; Sun Oil Co. 1 Ruby Bossier, F. Rankin Survey, TD 9,015 ft., perforations 8,252-8,255 ft., IP 21 bbl., ⅛-in. choke, gravity 38.8°.

TANGLEWOOD—Lee, April; Humble Oil & Refining Co. 2 George D. Vick et al, Bethel Smith 1/3 league, northeast portion of county, perforations 6,332-41 ft., Edwards lime, TD 6,345 ft., IP 10 bbl. on

pump, gravity 31.3°, 4 bbl. salt water per day.

VOTAW—Liberty, February; Miles Production Co. 1 Julia Hills, F. H. Votaw Survey, ½ mile southeast of North Cleveland field production and ½ mile north of old Cleveland field production, TD 5,787 ft., perforations 5,687-92 ft., IP 141 bbl., 10/64-in. choke, gravity 41.2°.

WEST VILLAGE MILLS—Hardin, August; Houston Oil Co. of Texas 1 Houston Oil & American Republics fee, Wilbur Cherry Survey, 7 miles northeast of Bragg townsite and 5 miles west of Village Mills production, TD 7,300 ft., perforations 6,026-36 ft., IP 4,944,000 cu. ft. gas, ¼-in. choke, shut-in pressure 2,552 psi.

UNNAMED—Austin, March; Gulf Oil Corp. 1 Allen Lesikar et al, A. Kuykendall league, A-243, 2½ miles west of New Ulm, TD 10,017 ft., perforations 9,612-18 ft., IP 44 bbl., ⅛-in. choke, 1,000,000 cu. ft. gas per day, gravity 38°.

UNNAMED—Hardin, December; Gulf Oil Corp. A-1 Richard Teel Estate, Thos. C. Gaines Survey, 6,750 ft. from nearest production off southwest flank of Saratoga dome, TD 5,119 ft., top sand 4,446 ft., perforations 4,446-60 ft., IP 101 bbl., 9/64-in. choke, gravity 36.7°.

UNNAMED — Harris, November; F. M. Corzelius 2 H. H. Rath, W. Sevey Survey, 1 mile northwest of Aldine, TD 7,773 ft., top sand 7,361 ft., perforations 7,361-65 ft., IP 3,571,000 cu. ft. gas and 72 bbl. condensate, ¼-in. choke, gravity 59.6°.

UNNAMED—Jefferson, February; McCarthy Oil & Gas Corp. 1 Mrs. W. H. Wood et vir, T.&N.O. Survey, Section 65, 2½ miles north of North Winnie, TD 11,228 ft., perforations 10,446-54 ft., Frio sand, IP 28 bbl. condensate and 2,500,000 cu. ft. gas, ¼-in. choke, shut-in pressure 3,850 psi., gravity 56.6°, 2 bbl. salt water per day.

UNNAMED—Liberty, June; The Texas Co. 2 John A. Deering et al, H&TC Survey, Section 134, A-488, off east side of old Dayton dome, TD 8,113 ft., perforations 7,550-54 ft., IP 2,420,000 cu. ft. dry gas, 3/16-in. choke, and 18,000,000 on open flow.

UNNAMED—Liberty, August; Miles Production Co. 2 H. O. Blanding, James Eldridge Survey, A-182, 1¼ miles southwest of Cleveland field production, TD 5,997 ft., perforations at 5,924-30 ft., IP 2,500,000 cu. ft. gas and 21 bbl. condensate, 10/64-in. choke.

UNNAMED—Newton, June; American Republics Corp. 1 Newton County Lumber Co., Gist area, P. L. & I. Wheaton Survey, Section 2, TD 7,852 ft., IP 150 bbl. condensate and 10,000,000 cu. ft. gas, ¼-in. choke, gravity 54.3°.

UNNAMED—Wharton, December; Hassie Hunt, Trustee, 1 J. W. Prasifka, S. A. Larche Survey and Joseph Clements Survey, 2¼ miles southeast of Prasifka gas field (old well drilled deeper), TD 7,515 ft., top sand 5,809 ft., perforations 5,809-15 ft., IP 1,500,000 cu. ft. gas and 10 bbl. condensate, 5/32-in. choke, gravity 55°.

UNNAMED — Wharton, December; Hunt Oil Co. 1 Edwin Hawes, Jr., Randall Jones and Martin Allen Survey, 1½ miles east of Wharton townsite, 6 miles west of Boling dome, TD 6,517 ft., top sand 5,199 ft., perforations 5,199-5,202 ft., IP 1,250,000 cu. ft. gas, 5/32-in. choke.

NEW PAYS

BEECH CREEK — Hardin, November; American Republics and Houston Oil Co. of Texas 3 H & T C-fee, H&TC Survey, Tract 2, TD 7,555 ft., top sand 6,458 ft., perforations 6,458-65 ft., IP 3,234,000 cu. ft. gas, ¼-in. choke. (An old well worked over, originally completed as an oil producer through perforations at 6,272-75 ft.).

BEECH CREEK—Hardin, August; American Republics Corp. 1 Fortenberry fee, Section 188, W. W. Fortenberry Survey, Section 188, TD 7,088 ft., perforations 6,728-30 ft., IP 155 bbl., ⅛-in. choke, gravity 41.6°.

BEECH CREEK, EAST—Hardin, March; American Republics Corp. 1 H.&T.C. fee, Section 199, H.&T.C. Survey, Section 199, TD 7,550 ft., perforations 6,653-57 ft., Cockfield sand, IP 102 bbl. oil and 39 bbl. salt water, ⅛-in. choke, gravity 40.1°.

BEECH CREEK, EAST—Hardin, April; American Republics Corp. 2 H.&T.C. fee, H.&T.C. Section 119, TD 7,449 ft., perforations 6,711-13 ft., IP 154 bbl., ⅛-in. choke, gravity 38.5°.

BEECH CREEK, NORTH—Hardin, September; American Republic Corp. 4 Olive Sternenberg & Co., John Taylor Survey, TD 7,336 ft., PB 6,215 ft., perforations 6,212-13 ft., IP 92 bbl., ⅛-in. choke, gravity 43.1°, 5.5 per cent water.

BOLING—Fort Bend, June; The British-American Oil Producing Co. 1 J. M. Moore, Charles A. Bettner Survey, A-11, on north flank of Boling dome, TD 4,180 ft., Frio, perforations 3,762-69 ft., IP 114 bbl., ⅛-in. choke, gravity 23°.

CLINTON—Harris, August; Stanolind Oil & Gas Co. 2 A. S. Moody, Reels & Trobough Survey, on northeast side of oil production in gas area, TD 10,001 ft., perforations 8,000-48 ft., Cockfield, IP 1,519,000 cu. ft. dry gas, 8/64-in. choke, shut-in pressure 4.890 psi.

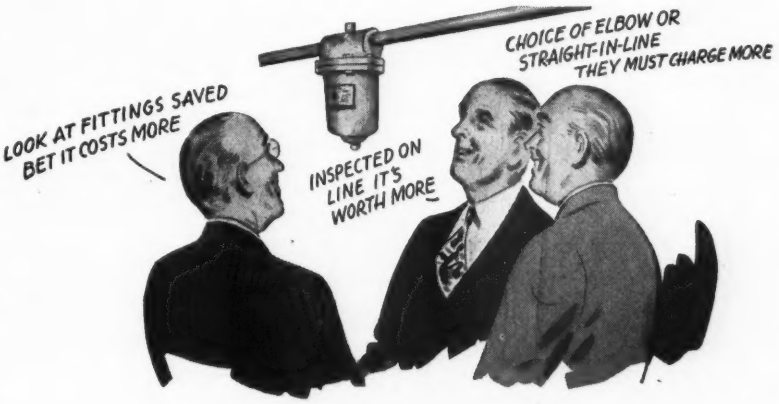
COTTONWOOD—Liberty, December; William Helis 3 Hirsch estate, in T&NO Survey, Section 17, TD 8,200 ft., top sand 7,942 ft., Hackberry, perforations 7,943-54 ft., IP 1,190,000 cu. ft. gas and 84 bbl. condensate, 10/64-in. choke, gravity 46.5°.

DANBURY—Brazoria, May; Humble Oil & Refining Co. 1 Roberson estate, H. Austin League 5, A-13, TD 8,642 ft., perforations 7,971-76 ft., IP 3,053,000 cu. ft. gas, ¼-in. choke, shut in.

DAY—Madison, October; Sun Oil Co. 1 J. L. Cleere, John Crownover Survey, TD 2,500 ft., perforations 2,371-72 ft., IP 25 bbl. on pump, gravity 22.8°.

EAST MAYES — Chambers, December; Humble Oil & Refining Co. 1 East Mayes Gas unit, E. H. R. Wallis Survey, TD 10,000 ft., top sand 8,850 ft., Frio, perforations 8,850-53 ft., IP 257 bbl. condensate and 5,420,000 cu. ft. gas, ¼-in. choke, gravity 58.2°.

EGYPT DEEP—Wharton, October; Claud B. Hamill 2 F. B. and Donald Duncan, Alexander Edgar League, TD 7,809 ft., top sand 7,160 ft., perforations 7,160-64 ft., IP 38 bbl. condensate and 1,140,000 cu. ft. gas, ¼-in. choke, gravity 53.9°.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FANNETT—Jefferson, March; Gulf Oil Corp. A-3 R. S. Jackson, W. H. Smith Survey, A-198, TD 13,503 ft., perforations 11,045-053 ft., IP 6,220,000 cu. ft. gas and 74 bbl. condensate, 10/64-in. choke, gravity 47°.

GIST—Newton, January; Standard Oil Co. of Texas 1 J. S. Peters et al, J. D. Bland Survey, TD 7,255 ft., Hackberry, perforations 7,196-97 ft., IP 156 bbl., 9/64-in. choke, gravity 38.8°.

GLASSCOCK—Colorado, June; Coast Co. 1 C. G. Glasscock Unit 1, BBB&C Survey, A-114, TD 9,580 ft., perforations 9,492-9,546 ft., Wilcox, IP 121 bbl., 5/32-in. choke, gravity 40°.

HANKAMER—Liberty, October; Gulf Oil Corp. 1-C Abbie M. Evans et al, J. C. Barrow Survey, A-670, TD 7,750 ft., PB 2,019 ft., perforations 1,996-2,010 ft., IP 38 bbl. on pump, gravity 19.8°, 50 per cent water.

HOCKLEY—Harris, July; Magnolia Petroleum Co. 7 Warren ranch, H.T.&B. 1, A-411, TD 3,725 ft., perforations 3,063-66 ft., IP 168 bbl., 12/64-in. choke, gravity 25.6°.

HUMBLE—Harris, June; Wilson Oil Co. 17 R. E. Burt, J. B. Stevenson Survey, TD 3,192 ft., perforations 3,146-56 ft., and 3,179-84 ft., IP 145 bbl., 11/64-in. choke, gravity 22.3°.

JERGINS—Chambers, January; The Texas Co. 2 Annie Schilling, C. Smith Survey, TD 6,550 ft., perforations 6,395-99 ft., Marginulina, IP 183 bbl., 9/64-in. choke, gravity 36.1°.

LUCKY—Matagorda, February; Stanolind Oil & Gas Co. 3 C. J. Anderson, E. Hall Survey, old well worked over (originally discovery well of Whitson pool but now in Lucky), TD 10,800 ft., perforations 8,570-76 ft., IP 182 bbl., ⅛-in. choke, gravity 38°.

MANVEL—Brazoria, July; The Salt Dome Oil Corp. et al 2 C. W. Way et ux, Thomas Spraggins Survey, A-366, TD 5,870 ft., perforations 5,786-92 ft., IP 79 bbl., ¼-in. choke, gravity 29.1°.

MIDFIELD, NORTHWEST — Matagorda, October; Rowan Drilling Co. and Texas Gulf Production Co. 1 Denman Kountze, I&GN Survey, A-279, Section 18, Block 8, TD 6,757 ft., perforations 6,242-44 ft., IP 151 bbl., ⅛-in. choke, gravity 34.2°.

NORTH DELHI—Harris, July; Cities Service Oil Co. 1 David Rorick, Section 48, H&TC Survey, Block 2, dual completion, TD 7,604 ft., perforations 7,274-7,280 ft., and 7,252-63 ft., IP 1,415,000 cu. ft. gas and 31 bbl. condensate, 10/64-in. choke, perforations 7,050-56 ft., IP 1,858,000 cu. ft. gas and 32 bbl. condensate, ¼-in. choke, gravity 54.8°, shut-in pressure 2,305 psi.

NORTH DURKEE — Harris, November; Union Producing Co. 1 Langtry et al, WCRR Survey, Abstract 937, Section 21, Block 4, TD 7,610 ft., top sand 7,084 ft., perforations 7,085-90 ft., IP 140 bbl., 9/64-in. choke, gravity 35.6°.

NORTH PORT NECHES—Orange, July; Gulf Oil Corp. 1 J. D. & O. J. Todd, Jr., James V. Polk Survey, A-512, TD 8,704 ft., perforations 8,420-50 ft., IP 164 bbl. condensate and 6,325,000 cu. ft. gas, ¼-in. choke, shut-in pressure 3,285 psi., gravity 57°.

NORTH PORT NECHES—Orange, August; Gulf Oil Corp. 1 W. W. Kyle, Sr., William Allen Survey, A-28, TD 10,628 ft., perforations 8,980-90 ft., shut-in, no gage, gravity 52°.

SABINE TRAM—Newton, January; Gulf Oil Corp. 1-C J. P. Bevil, Sr., et al, R. I. Richardson Survey, perforations 7,366-70 ft., IP 60 bbl. oil and 58 bbl. salt water per day, ⅛-in. choke, gravity 43.1°, TD 8,027 ft.

SABINE TRAM—Newton, April; Gulf Oil Corp. C-2 J. R. Bevil, Sr., et al, in R. I. Richardson Survey, A-1198, TD 8,532 ft., perforations 7,785-89 ft., IP 16.2 bbl. oil and 209 bbl. salt water, ¼-in. choke, gravity 36°.

SARATOGA—Hardin, April; Cities Service Oil Co. 7 Mariker Lumber Co. fee, Nancy Fuller league, TD 5,455 ft., perforations 5,064-5,110 ft., Cook Mountain sand, IP 248 bbl., 13/64-in. choke, gravity 38.7°.

SOUTH GILLOCK—Galveston, May; Pan American Production 1 Eulies Nunez, Block D, Lot 1, Kohfeldts revised subdivision, James Smith Survey, A-176, TD 9,037 ft., perforations 8,956-66 ft., IP 321 bbl., 14/64-in. choke, gravity 39.5°.

SOUTH HUTCHINS—Wharton, January; Adams & Haggarty 1 Kenneth A. Meek et ux, I&GN Survey, TD 5,924 ft., perforations 3,205-11 ft., IP 1,730,000 cu. ft. dry gas, ¼-in. choke, shut-in pressure 1,290 psi.

SOUTH LIBERTY—Liberty, June; Lenoir M. Josey et al 6 Jos. Mitchell estate, A. G. White Survey, TD 6,606 ft., Cook Mountain, perforations 6,291-6,321 ft., IP 290 bbl., ⅛-in. choke, gravity 38.8°.

SOUTH LIBERTY—Liberty, March; L. M. Josey et al 4 Jos. Mitchell estate, M. G. White Survey, TD 6,465 ft., perforations 6,111-16 ft., IP 296 bbl., 10/64-in. choke, gravity 39°.

SOUTH LIBERTY—Liberty, August; Sam Maceo et al, 1 J. F. Richardson, M. G. White Survey, TD 4,700 ft., top sand 4,430 ft., perforated interval not reported, IP 92 bbl., 7/64-in. choke, gravity 36.1°.

SOUTH LIBERTY—Liberty, September; Floyd L. Karsten 4 Leon Mitchell, M. G. White Survey, TD 7,980 ft., perforations 7,534-62 ft., IP 293 bbl., 10/64-in. choke, gravity 35.6°.

SOUTH MAYES—Chambers, March; Humble Oil & Refining Co. 1 South Mayes Unit 1, E. H. R. Wallis Survey and D. Richardson Survey, A-212, TD 12,100 ft., perforations 12,021-026 ft., Lower Frio sand, IP 134 bbl. condensate, ⅛-in. choke, and 1,344,000 cu. ft. gas, gravity 42.9°. (Deepest production in State of Texas.)

SOUTH PIERCE JUNCTION—Harris, January; McCarthy Oil & Gas Corp. 1 Vivian Smith, James Hamilton Survey, Section 33, TD 7,630 ft., perforations 7,360-67 ft., IP 227 bbl., 9/64-in. choke, gravity 32.3°.

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TWIN BASIN—Wharton, January; Floyd L. Karsten 1 W. T. Ellis, ETRR Survey, Section 23, 5 miles south of Pierce, TD 7,154 ft., perforations 6,586-97 ft., IP (flowed dry gas and shut in, no gage), shut-in pressure 2,450 psi.

WEST COLUMBIA—Brazoria, July; The Texas Co. 32 J. G. Phillips et al, George Tennille league, A-31, TD 7,331 ft., perforations 6,676-6,706 ft., IP 162 bbl., ¼-in. choke, gravity 28°.

WEST COLUMBIA—Brazoria, October; The Texas Co. 53 W. H. Abrams, George Tennille Survey, A-131, TD 5,883 ft., Marginulina, perforations 5,542-46 ft., 5,552-62 ft., and 5,563-71 ft., IP 226 bbl., 10/64-in. choke, gravity 28.7°.

WEST CONROE—Montgomery, May; Sam Pattillo 1 R. L. Calfee, James McDillon Survey, Block 9, TD 4,713 ft., perforations 4,596-4,602 ft., IP 158 bbl., 10/64-in. choke, gravity 30.7°.

WINNIE—Jefferson, July; Al Brown et al, 1 Edwin L. Stephen, Lot 84, Francisco Valmore league A-54, TD 7,816 ft., Miocene sands ,perforations 5,462-68 ft., IP 1,795,000 cu. ft. dry gas, 12/64-in. choke, open flow calculation 25,000,000 cu. ft. gas.

SOUTHWEST TEXAS
(District 1)

NEW POOLS

GAUSE—Milam, August; Standard Oil Co. of Texas 1 Lucinda Green et al, W. D. Thompson Survey, 3 miles west of Gause and 8 miles northeast of Milano, Edwards lime, TD 5,747 ft., perforations 5,697-5,704 ft., IP 30 bbl. on pump, gravity 30°.

JIM SMITH—Bastrop, April; James E. Smith 1 T. J. Caldwell, Jose A. Navarro grant, 5 miles north of Cedar Creek, 1½ miles southeast of Travis County line, TD 1,647 ft., open hole 1,608-47 ft., IP 31 bbl. on pump, no gas, no water, gravity 35.5°.

KELLY—Caldwell, September; Dave Kelton & Hubert Braselton, 1 Charles T. Kelley, R. B. Jarman Survey, 5 miles southeast of Lockhart, TD 2,520 ft., open hole 1,922-2,070 ft., Austin Chalk, IP 149 bbl. on pump, gravity 40.5°.

POTEET—Atascosa, December; McFurland Drilling Co. 2 Henrietta Krisch et al, Survey 1207, 3 miles north of Poteet, top pay 3,570 ft., TD 3,612 ft., open hole 3,562-3,612 ft., Anacacho lime, IP 127 bbl., ¼-in. choke, no gas, gravity 41.4°.

SAN MIGUEL CREEK—McMullen, November; Atlantic Refining Co. and Newman Bros. et al 1 Louis M. Gubbels, G. H. Smith Survey 26, 11 miles north-northeast of Tilden, top pay 5,421 ft., TD 5,425 ft., open hole 5,421-25 ft., IP 84 bbl., 5/32-in. choke, gravity 35.4°.

SEGUIN—Guadalupe, September; Butler Oil Co. 1 Emil Borchers, A. M. Esnaurigar XI league, 5 miles northwest of Seguin, Buda lime, TD 1,192 ft., plugged back 1,047 ft., open hole 995-1,047 ft., IP 21 bbl., open flow, no gas, gravity 12°.

UNNAMED—Edwards, October; V. J. Meyer 1 Billy Holland, HE&WT Survey, 23 miles west of Rock Springs, TD 1,166 ft., PB 541 ft., open hole 476-541 ft., IP 5 bbl. on pump, no gas, gravity 18°.

UNNAMED—Frio, November; Lewis Oil Co. B-1 Oppenheimer & Lang, J. A. Franglin Survey 10, 8 miles southwest of Charlotte and 3½ miles southwest of Charlotte field, TD 5,588 ft., top pay 5,542 ft., open hole 5,567-88 ft., IP 10 bbl., ⅞-in. choke, gravity 40.1°.

UNNAMED—McMullen, November; Amman & McNab, Ltd. A-7 Mrs. Annie Graves Dolph et al, L. Musquiz Survey 12, in Jourd area, 17 miles southeast of Tilden, top pay 1,356 ft., TD 1,368 ft., open hole 1,356-68 ft., IP 34 bbl. on pump.

NEW PAYS

JOURDANTON—Atascosa, February; Humble Oil & Refining Co. 2 A. J. Krause, Natascosa Colony Farm subdivision, James P. Gorman Survey 1189, TD 7,658 ft., perforations at 7,155-64 ft., IP 108 bbl., 3/32-in. choke, gravity 29.9°, 0.2 per cent water.

SAN CAJA—McMullen County, March; Edwin M. Jones estate C-5 Harry Ezzell, agent, Section 56, Hayes-Ezzell subdivision, 14 miles southwest of Simmons City, near Live Oak County line, OWDD, OTD 7,488 ft., new TD 9,130 ft., perforations 8,250-97 ft., Eocene, IP 1,000,000 cu. ft. gas, ¼-in. choke.

SOUTHWEST TEXAS
District 4

NEW POOLS

ARMSTRONG, SOUTH—Jim Hogg, July; King & Daubert 2 E. L. Armstrong, J. S. Williams Survey 295, 2 miles south of Armstrong field, 13 miles southwest of Hebbronville, TD 3,215 ft., perforations 3,210-14 ft., Loma Novia sand, IP 99 bbl., ⅞-in. choke, gravity 27°.

ARROWHEAD—Hidalgo, July; Sun Oil Co. 1 Bentsen Brothers, Section 3, G. O. Newman subdivision, El Benadito grant, 4 miles south of La Reforma field in northeast Starr County, and 7 miles south of La Reforma townsite, TD 9,120 ft., perforations 5,967-69 ft., IP 44 bbl., 11/64-in. choke, gravity 47°.

BAILEY—Nueces, February; Producers Development Co. 1 Louis Bailey, Lot 15, Agua Dulce Farm lots, 1½ miles east of Agua Dulce and approximately 1½ miles west of Agua Dulce field, TD 6,210 ft., perforations 6,148-58 ft., IP 14,500,000 cu. ft. gas on open flow, plus condensate, shut-in pressure 2,380 psi., gravity 58°.

BANDERA, NORTH—Jim Wells, January; La Gloria Corp. 1 Adolph Moos, Las Anacuas grant to Vincente Ynojosa, 9 miles southwest of Ben Bolt, 6 miles southwest of Ben Bolt field and 2 miles northeast of Bandera field, TD 6,520 ft., perforations 6,234-46 ft., Jackson sand, IP 2 bbl. on jet, no water.

BLANCO CREEK—Refugio, October; Southern Minerals Corp. 1 W. S. Perryman, J. de la Garza Trudo Survey, Abstract 287, 5½ miles north of Refugio, dual completion, TD 7,175 ft., perforations 6,630-35 ft., IP 27,000,000 cu. ft. gas plus condensate, shut-in pressure 2,393 psi., perforations 7,114-17 ft., IP 9,250,000 cu. ft. gas plus condensate, shut-in pressure 3,023 psi.

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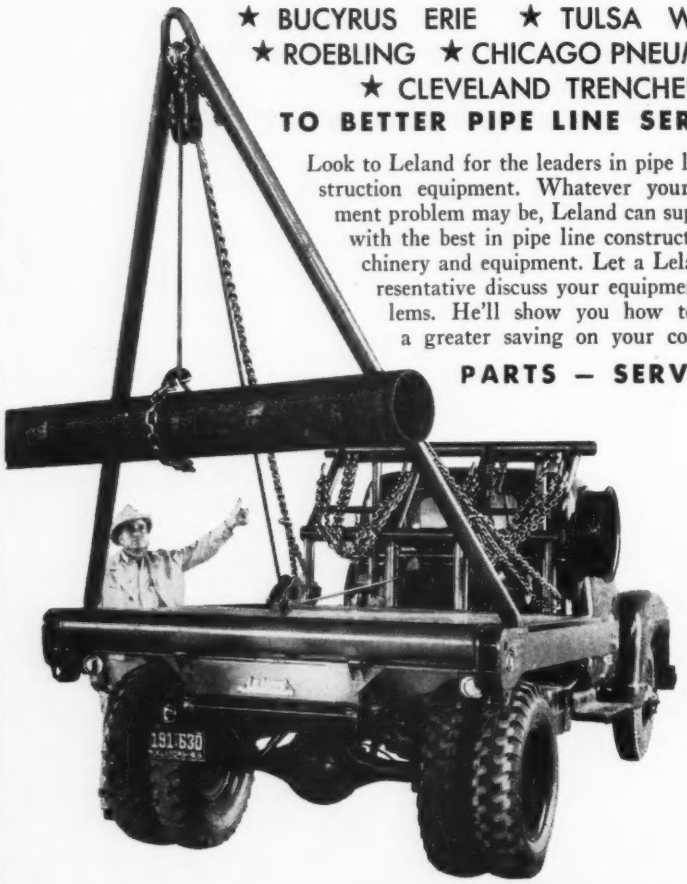

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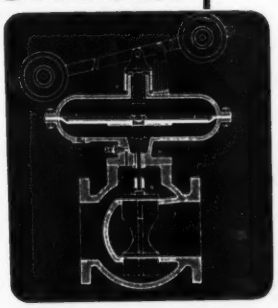

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At the close of business December 31, 1948

ASSETS

Cash on Hand and Due from Banks	$128,590,770.02
United States Securities Owned	54,388,365.45
Other Stocks and Bonds	8,568,393.45
Loans and Discounts	138,454,945.69
Banking House and Equipment	2,964,625.76
Other Assets	111,863.35
	$333,078,963.72

LIABILITIES

Capital Stock	$ 7,500,000.00	
Surplus Fund	7,500,000.00	
Undivided Profits	6,362,303.87	$ 21,362,303.87
Reserved for Taxes, Etc.		1,889,913.73
Reserved for Contingencies		738,676.26
DEPOSITS:		
U. S. Gov't	$ 7,129,936.21	
Other Deposits	301,958,133.65	$309,088,069.86
		$333,078,963.72

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BOROSA—Starr, October; Sunray Oil Corp. 1 Davenport-State, El Panal area, CCSD&RGNG Survey 280, 19 miles north of Sullivan City, 1¾ miles east of Rincon field and 1½ miles southwest of Sunray 1 Slick gas discovery well, El Panal field, TD 6,002 ft., perforations 4,297-4,303 ft., IP 144 bbl., 5/32-in. choke, gravity 47.6°.

BORREGAS, WEST—Kleberg, May; Humble Oil & Refining Co. MC-1 King Ranch-West Borregas, Santa Gertrudis grant, 11½ miles west-northwest of Kingsville and 4½ miles northwest of Borregas field, TD 7,047 ft., perforations 5,960-64 ft., IP 11 bbl., 3/32-in. choke, gravity 40.2°.

CATARINA—Dimmit, September; Henderson Coquat and Algord Co. 2 H. A. Dillon, Lot 2, Block 111, Taft Catarina Farms subdivision "C," in GWT&P Survey 41, A-110, 4 miles southwest of Catarina, Navarro sand, TD 5,210 ft., PB 4,932 ft., open hole 4,890-4,932 ft., IP 20 bbl. on pump, gravity 42°, 4 bbl. water.

CHARAMOUSCA, NORTH—Duval, June; Magnolia Petroleum Co. B-1 Drought, J. L. Saenz Survey 156, 13 miles northwest of Freer, approximately 1½ miles northwest of Charamousca field, TD 3,017 ft., perforations 2,064-67 ft., IP 54 bbl. on pump, gravity 32.9°.

COASTAL—Starr, March; Coastal Refineries, Inc., and W. D. Kennard B-1 Luis Pena, Porcion 38, north of Sullivan City, 2 miles north of San Fordyce field, TD 5,850 ft., perforations 5,760-75 ft., IP 39 bbl., 7/64-in. choke, gravity 42.5°.

COPANO BAY—Aransas, September; Phillips Petroleum Co. 1 State-Copano Bay, Copano Bay Tract 34, approximately 9 miles north-northeast from Rockport and 3 miles north of Fulton Beach field, Frio sand, TD 9,512 ft., perforations 7,143-48 ft., IP 164 bbl., ⅛-in. choke, gravity 41.5°.

CORPUS CHRISTI BAY—Nueces, May; The Texas Co. 1 State Tract 9, State of Texas Tract 9, Corpus Christi Bay, 3¼ miles southwest of Ingleside, TD 11,563 ft., perforations 10,675-88 ft., IP 11,500,000 cu. ft. gas, open flow, on 5/32-in. choke flowed 121 bbl. condensate condensate and 3,200,000 cu. ft. gas, working pressure 6,275 psi., shut-in pressure 7,250 psi., gravity 54.6°.

CORPUS CHRISTI, WEST—Nueces, January; Tide Water Associated Oil Co. 1 Guaranty Title & Trust Co., Enrique Villareal grant, 4½ miles west-southwest of Corpus Christi, Saxet area, TD 11,490 ft., perforations 11,115-70 ft., basal Frio sand, IP 198 bbl., 5/32-in. choke, gravity 46.2°.

D.C.R. 79—Duval, August; Magnolia Petroleum Co. 1 Duval ranch, Section 79, CCSD&RGNG Survey 79, 6 miles west of Freer and 2¼ miles west-northwest of Lundell field, TD 2,539 ft., perforations 1,478-81 ft., Cole sand, IP 69 bbl. on pump, gravity 20°.

EL MESQUITE—Duval, June; Cam Corp. 3 G. N. Olson, El Mesquite grant, 5 miles northwest of Hebbronville and approximately 5 miles south-southeast of Cam field, TD 3,038 ft., perforations 3,004-12 ft., IP 3,300,000 cu. ft. gas on open flow, shut-in pressure 1,050 psi.

EL MESQUITE (OIL)—Duval, June; Cam Corp. C-1 E. J. Rogers et al, Share 2, El Mesquite grant, 250 ft. southwest of 3 Olson (gas well), 6 miles northwest of Hebbronville, TD 3,044 ft., open hole 3,018-44 ft., IP 6 bbl., 9/64-in. choke, gravity 46°.

EL PANAL—Starr, July; Sunray Oil Corp. 1 T. B. Slick estate, El Panal grant, 3½ miles east of Rincon field, 2½ miles southeast of Yzaguirre field, TD 6,005 ft., perforations 4,671-79 ft., IP 2,200,000 cu. ft. gas with spray of condensate, shut-in pressure 1,835 psi.

FITZSIMMONS, NORTH—Brooks, August; The Texas Co. 1 Amanda C. Garcia et al, H&GN RR Survey 429, 10.9 miles northwest of San Diego, and 1½ miles northeast of Fitzsimmons field, TD 5,041 ft., perforations 4,497-4,505 ft., IP 90 bbl., ⅛-in. choke, gravity 44.4°.

GOVERNMENT WELLS-WILCOX—Duval, February; Ralph E. Fair, Inc., & Jack Woodward, Inc., 1 H. Wendt, J. Poitevent Survey 43, 2 miles north-northwest of Freer, OWDD, OTD 5,526 ft., new TD 7,800 ft., Wilcox, perforations 7,492-7,540 ft., IP 2,500,000 cu. ft. gas, ¼-in. choke, gas-condensate ratio 100,000, shut-in pressure 3,700 psi.

HAGIST—Duval, October; The Atlantic Refining Co. 1 Hagist Ranch, Inc., BS&F Survey 267, 10 miles northeast of Freer, and 1¼ miles northeast of Eagle Hill field, TD 10,081 ft., perforations 7,044 to 7,208 ft., IP 2,550,000 cu. ft. gas and 59 bbl. of condensate, ¼-in. choke, gravity 56.7°.

LA COPITA—Starr, October; Rowan & Hope 1 Bentsen Brothers, CCSD&RGNG RR Survey 549, 7 miles northeast of Rincon field, dual completion, TD 7,003 ft., perforations 5,330-35 ft., IP gas-condensate, no gage; perforations 6,954-56 ft., IP 149 bbl., ⅛-in. choke, gravity 40.8°.

LAMAR—Aransas, June; Sullivan & Garnett 1 George E. Shelly et al (near Lamar), Tract 2 out of Reserve "D" Survey, ½ mile east of Lamar townsite, on south end of Lamar Peninsula, TD 7,625 ft., perforations 7,286-96 ft., IP 30 bbl., 9/64-in. choke, gravity 33°.

LONGHORN, SOUTH—Duval, February; Hiawatha Oil & Gas Co. 1-A Leroy Denman, Santos Garcia grant, A-1985, 4 miles east of Realitos, Teddlie sand, TD 5,757 ft., perforations 4,844-52 ft., IP 10,000,000 cu. ft. gas on open flow, gas-condensate ratio 54,000, shut-in pressure 1,720 psi.

LOVIA—Duval, April; R. F. Schoolfield & H. J. Gravis 1 J. F. Welder heirs, Survey 213, 7 miles northeast of Freer, 1 mile south of Seven Sisters field and 2 miles north of Loma Novia field, TD 2,684 ft., open hole 2,662-84 ft., IP 44 bbl. on pump.

LUNDELL, SOUTH—Duval, June; Magnolia Petroleum Co. 21 J. C. Wilson, P. E. White Survey 136, A-1622, 4 miles southwest of Freer, 1 mile west of South Government Wells field and 1½ miles southsoutheast of Lundell field, TD 2,807 ft., perforations 1,460-65 ft., IP 28,000,000 cu. ft. dry gas on open flow, shut-in pressure 375 psi.

NORTH MATHIS—San Patricio, January; Fred M. Manning 1 Ross-Singleton, in I&GN Survey A-172, 3 miles north of Mathis, TD 5,010 ft., perforations 3,490-95 ft., IP 7,000,000 cu. ft. dry gas on open flow, shut-in pressure 1,560 psi.

PALITO BLANCO—Jim Wells, November; The Texas Co. 1 Zella C. Foster, Swanson Yarbrow Survey, 10 miles south of San Diego and approximately 5 miles westsouthwest of Ben Bolt field, top pay 4,460 ft., TD 7,800 ft., perforations 4,460-70 ft., IP 11,800,000 cu. ft. gas on open flow.

PANTEX—Duval, May; Pantex Corp. 1 Dineoio Perez, T&NO RR Survey 141, 8 miles northeast of Bruni, 2 miles northeast of Richardson field, TD 3,207 ft., perforations 2,593-2,604 ft., IP 73 bbl. on pump, gravity 23.7°.

PAYNE—Hidalgo, August; Thomas O. Payne et al 1 D. J. Schwarz, Lot 3, Block 25, Capisallo district, of the American Rio Grande Land & Irrigation Co., Llano Grand grant, 4 miles northwest of La Feria, TD 7,615 ft., perforations 7,562-66 ft., IP 153 bbl., 11/64-in. choke, gravity 45.3°.

POQUITA CREEK—Duval, August; Holly Development Co. & Barbara Oil Co. 2 Driscoll estate, Block 68, Santa Rosalia grant, 14 miles west of Benavides, 2⅝ miles southeast of Rancho Solo field, TD 2,537 ft., perforations 2,512-37 ft., IP 74 bbl. on pump, no gas, gravity 23.8°.

QUIEN SABE (GAS)—Webb, February; O. W. Killam et al 1 Marrs McLean, 6½ miles southwest of Bruni, in Block 15 of Henry James subdivision out of northeast part of Las Albercas grant, Mirando sand, TD 2,658 ft., perforations 2,314-16 ft., IP 35,000,000 cu. ft. gas on open flow, spray of oil, shut-in pressure 535 psi.

QUIEN SABE (OIL)—Webb, March; O. W. Killam et al, 2 Marrs McLean, Block 6, James subdivision of Albercas grant, 6½ miles southwest of Bruni, approximately 2,200 ft. north-northeast of 1 McLean, gas discovery, 1½ miles northeast of North Albercas field, TD 2,703 ft., perforations 2,347-51 ft., IP 67 bbl. on pump, gravity 21°, GOR 620.

RICHARD KING, SOUTH—Nueces, June; Skelly Oil Co. 1 Richard King, Section 27, Richard King Farm lots, ¼ mile northwest of Agua Dulce field and 2 miles south of Richard King field, TD 6,213 ft., perforations 5,432-50 ft., IP 8,500,000 cu. ft. gas on open flow, plus condensate, shut-in pressure 2,100 psi., no water.

SALT LAKE—Aransas, November; The Atlantic Refining Co. 1 V. G. Gwynn, Joseph Hollis Survey, Abstract 76, 3 miles northwest of Rockport, TD 10,000 ft., top pay 7,209 ft., perforations 7,209-14 ft., IP 41 bbl., 9/64-in. choke, gravity 41.6°.

SAN PABLO—Jim Hogg, February; Baldridge & King et al 3 Mrs. S. K. East, H&GN Survey 36, 16 miles southwest of Hebbronville, 6½ miles south of Armstrong field, Pettus sand, TD 3,890 ft., perforations 3,875-85 ft., IP 95 bbl., 5/32-in. choke, gravity 39°.

SARITA—Kenedy, May; Humble Oil & Refining Co. 3-B John G. Kenedy, Jr., Block 12, Kenedy Pasture Co., first addition to Sarita Township, El Paistle grant, 3.2 miles northeast of Sarita, TD 10,342 ft., perforations 5,894-5,909 ft., IP 13,500,000 cu. ft. gas, with considerable condensate, shut-in pressure 2,255 psi.

SEMMES—Starr, October; Coastal Refineries, Inc., and W. D. Kennard 1 D. R. Semmes, Porcion 88, 15 miles east-northeast of Rio Grande City, Share 20-B, Valadez heirs, fee, 2½ miles southeast of South Ricaby field, TD 3,033 ft., perforations 2,466-67 ft., IP 14 bbl., 3/32-in. choke.

SUN, WEST—Starr, April; Humble Oil & Refining Co. 3 E. Block heirs, in J. J. Sais grant, A-347, northwest of Sun field, TD 9,206 ft., perforations 8,833-48 ft., and 8,870-80 ft., IP 41 bbl., 3/16-in. choke, gravity 52.5°.

VAELLO—Duval, October; Hiawatha Oil & Gas Co. 2 Frank Vaello, Jr., San Andres grant, near Benavides field, 4 miles southeast of Benavides, TD 5,691 ft., perforations 4,860-65 ft., Woodley sand, IP 86 bbl., 5/32-in. choke, gravity 43.9°.

WOOD (Calallen)—Nueces, April; Rock Hill Oil Co. & W. Earl Rowe 2 E. D. Wood, 2 miles east of Riverside field and 2½ miles west of Calallen, TD 7,803 ft., perforations 7,490-94 ft., IP 120 bbl., 7/64-in. choke, gravity 41°. Note: Now included in Riverside, East field.

UNNAMED—Calhoun, September; Quintana Petroleum Corp. 1 Willet Wilson, Y. Benavides grant, 4 miles northwest of Port Lavaca and east of "Foester" field discovery, northeast of Sheriff field and west of old Port Lavaca field, TD 9,680 ft., perforations 8,834-40 ft., IP 86,000,000 cu. ft. gas on open flow.

UNNAMED—Duval, May; The Texas Co. 1 Duval Co. Ranch Co., NCT-49, Narcisco Hernandez Survey 54, 4½ miles northwest of Freer and 1 mile west of Government Wells-Yegua field, TD 2,912 ft., perforations 1,800-10 ft., IP 10 bbl. on pump, gravity 24°. Note: Included in Government Wells, North, 1,800-ft. sand field.

UNNAMED—Duval, August; Edwin B. Cox and Jake L. Hamon 1 Leila Peters, J. Poitevent Survey 159, A-385, between North Kohler and Rancho Solo-extension fields, Government Wells sand, TD 2,532 ft., IP 9,500,000 cu. ft. gas, open flow, shut-in pressure 740 psi.

UNNAMED—San Patricio, June; F. M. Boykin, Jr., A-1 C. V. Jones, Section 67, George H. Paul's subdivision of Coleman-Fulton Pasture Co. lands, 4 miles south of Taft and 1 mile southwest of southwest extension area at Midway field, OWDD, OTD 5,418 ft., new TD 7,506 ft., perforations 6,578-86 ft., IP 9,000,000 cu. ft. gas on open flow, gas-condensate ratio 31,250, shut-in pressure 2,360 psi., gravity 64°.

UNNAMED—Starr, November; Continental Oil Co. 5 Dee Davenport et al (Rincon area), Gregorio Jiminez Survey 280, 1½ miles east of Rincon field, TD 6,005 ft., top pay 4,245 ft., perforations 4,245-66 ft., IP 14,000,000 cu. ft. gas on open flow.

UNNAMED—Starr, November; Sun Oil Co. 1 Austin estate, Share 90, Porcion 39, 5 miles northwest of Sullivan City, TD 5,800 ft., top pay 3,724 ft., perforations 3,724-36 ft., IP 9,000,000 cu. ft. dry gas on open flow, shut-in pressure 1,430 psi.

UNNAMED—Starr, December; The Texas Co. 1 Samuel D. Bloomberg et al, Xavier Zamora Porcion 41, Abstract 77, 3,100 ft. east-northeast from Sun Oil Co. 1 M. Flores gas discovery well in Porcion 40, "Flores"

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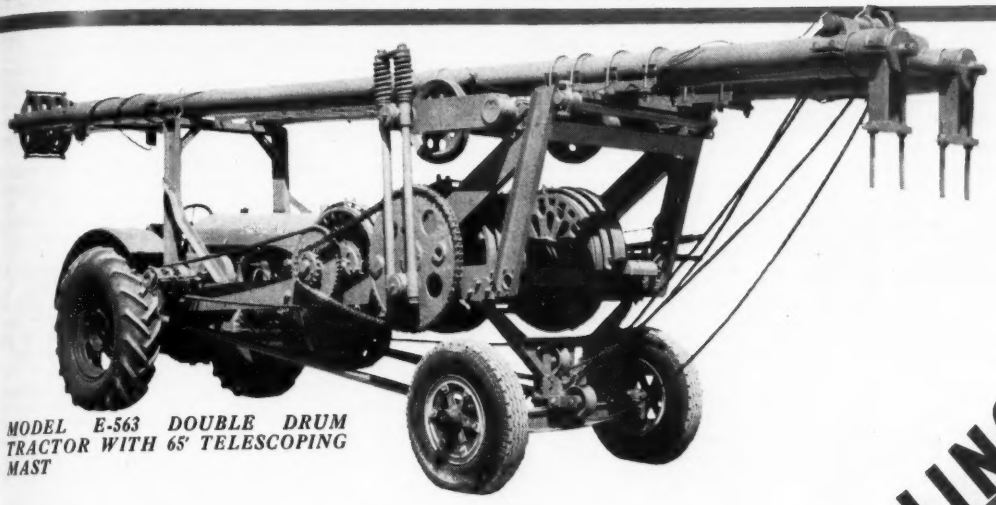

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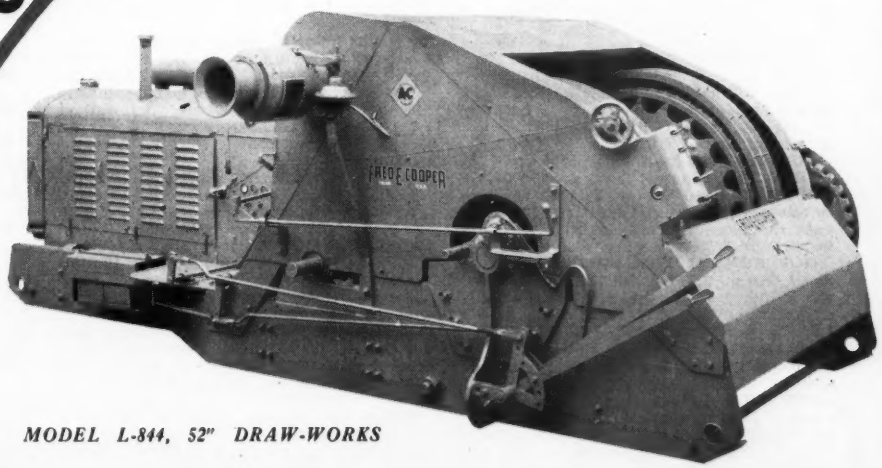

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UNNAMED—Victoria, September; Jergins Oil Co. 1 J. H. Fleming, F. G. Hidalgo grant, 7 miles south of Victoria and 1 mile south of Coletto Creek field, 3½ miles southeast of Raisin, TD 5,036 ft., perforations 3,264-65 ft., IP 423,000,000 cu. ft. gas, ⅛-in. choke, shut-in pressure 1,215 psi.

NEW PAYS

BLUCHER—Jim Wells, March; W. A. Richardson et al 1 Augusta Franz, W. B. Sanford revised subdivision of Section 30, H. P. Haldeman subdivision of Seeligson ranch, ¾ mile south of Premont townsite, TD 7,766 ft., perforations 7,663-70 ft., IP 30,000,000 cu. ft. gas on open flow, shut-in pressure 4,625 psi., no water.

BOYLE—Starr, April; Continental Oil Co. D-14 M. M. Garcia, Survey 908, "H" sand, TD 4,518 ft., perforations 3,780-97 ft., IP 1,750,000 cu. ft. gas on open flow, shut-in pressure 1,350 psi., no water.

CAGE RANCH—Brooks, January; Shell Oil Co., Inc., 2-C Jimmie Lenora Cage, Leonardo Vargas grant, TD 8,348 ft., perforations 7,800-20 ft. and 7,848-68 ft., IP 138 bbl. condensate and 3,588,000 cu. ft. gas, ¼-in. choke, 18,000,000 cu. ft. open flow, shut-in pressure 3,124 psi., gravity 59.2°.

CLOPTON—Starr, January; W. B. Jewel Osborn & Mid-Continent Petroleum Corp. 2 John Clopton, Tract 5, Evans subdivision, in south part of Porcion 86, 7 miles southeast of Rio Grande City, TD 4,006 ft., perforations 629-37 ft., IP 391,000 cu. ft. dry gas, ¼-in. choke, shut-in pressure 295 psi., no water.

EAST WHITE POINT—San Patricio, July; Stanolind Oil & Gas Co. 2 J. A. Teeter, Section 50, George H. Paul's subdivision of CPGCo. lands, TD 6,803 ft., perforations 3,337-40 ft., IP 103 bbl., 10/64-in. choke, gravity 20.8°.

FARENTHOLD—Nueces, July; Southern Minerals Corp. D-4 Richard King Farm lots, dual completion, TD 6,141 ft., perforations 5,760-66 ft., IP 62 bbl., ⅛-in. choke, gravity 48.4°; perforations 6,123-31 ft., IP 150 bbl., ⅛-in. choke, gravity 43.8°.

FLOUR BLUFF—Nueces, September; Humble Oil & Refining Co. 6 Henry L. Cordz, El Rincon de Corpus Christi grant, TD 12,786 ft., perforations 9,675-90 ft., IP 1,115,000 cu. ft. gas and 18 bbl. condensate, ⅛-in. choke, ratio 61,900, shut-in pressure 3,600 psi., gravity 43.6°.

FARENTHOLD—Nueces, February; Jack Little, trustee 1 W. F. Hackfeldt, O. B. Carver subdivision, Casa Blanca grant, ½ mile north of Farenthold field proper, dual completion, TD 5,621 ft., perforations 5,604-07 ft., IP 28 bbl., 9/64-in. choke; perforations 5,616-19 ft., IP 121 bbl., 9/64-in. choke.

FULTON BEACH—Aransas, August; Placid Oil Co. 2 A. C. Glass et al, Ocean View section, Gilliland & Lockhart Survey, TD 8,254 ft., perforations 8,236-46 ft., IP 23,500,000 cu. ft. gas on open flow with condensate, shut-in pressure 3,490 psi.

FULTON BEACH—Aransas, January; Wm. H. Hunt Trust Estate 4 Spencer-Kent-Crane, C. O. D. Gilliland Survey, TD 7,471 ft., perforations 6,947-54 ft., IP 20,000 cu. ft. gas on open flow, gas-condensate ratio 34,059, shut-in pressure 2,721 psi., gravity 56.8°.

GOVERNMENT WELLS-WILCOX—Duval, April; Ralph E. Fair, Inc., & Jack Woodward, Inc., 1 H. Wendt, 2 miles northwest of Freer, OWDD, OTD 5,526 ft., new TD 7,800 ft., perforations 7,492-7,540 ft., Wilcox, IP 16,200,000 cu. ft. gas on open flow, gas-condensate ratio 44,000, shut-in pressure 3,840 psi.

GYP HILL—Brooks, August; Sun Oil Co. 1 Lowe-Middlebrook unit, Sabas Perez Survey 334, TD 7,208 ft., perforations 7,136-60 ft. and 7,165-76 ft., IP 3,800,000 cu. ft. gas on open flow, gas-condensate ratio 28,900, shut-in pressure 2,890 psi.

JAY SIMMONS (NORTH LA REFORMA) Starr, June; Sunray Oil Corp. 1 Dr. Jose G. Garcia, Santa Cruz grant, TD 6,505 ft., dual completion, perforations 6,128-35 ft., IP 115 bbl., 5/32-in. choke, gravity 35°; perforations 6,192-6,202 ft., IP 107 bbl., 3/16-in. choke, gravity 36.7°.

KENNARD—Starr, January; Coastal Refineries, Inc., & W. D. Kennard 4 E. M. M. Garcia, northwest flank of field, dual completion, Paredes sand, perforations 3,804-16 ft., IP 69 bbl., ⅛-in. choke; "K" sand, perforations 4,028-32 ft., (new sand), IP 82 bbl., 7/64-in. choke, gravity 42.6°.

KENNARD—Starr, April; Coastal Refineries, Inc., & W. D. Kennard E-6 M. M. Garcia, Survey 970, TD 4,275 ft., perforations 3,903-09 ft., IP 50 bbl., 5/32-in. choke, gravity 42.4°.

LA BLANCA—Hidalgo, March; La Gloria Corp. A-1 La Blanca subdivision Unit, Lot 196, La Blanca Agricultural Co. subdivision "B," ½ mile southeast of La Blanca, dual completion, perforations 7,734-46 ft., IP 18,000,000 cu. ft. gas on open flow; perforations 7,680-98 ft., IP 25,000,000 cu. ft. gas on open flow.

LA GLORIA—Brooks, May; Magnolia Petroleum Co. 1 Luella Proctor, Lot 6, Block 19, Falfurrias Farm & Garden tracts, TD 12,000 ft., perforations 9,780 to 9,860 ft., IP 7,800,000 cu. ft. gas on open flow, gas-condensate ratio 56,600, shut-in pressure 4,200 psi.

LA GLORIA—Jim Wells, August; Magnolia Petroleum Co. 1 H. B. Barrera, Lot 5, Block 5, lands adjoining townsite of La Gloria, dual completion, Scott sand, perforations 6,120-30 ft., IP 89 bbl., 9/64-in. choke, gravity 40.4°; Frio, Barrera sand, perforations 7,563-68 ft. (new sand), IP 115 bbl., 7/64-in. choke, gravity 40°, TD 7,800 ft.

LA REFORMA—Starr, March; Baldridge & King et al, 1 A. Guerra unit, Santa Cruz grant, TD 8,594 ft., perforations 8,553-82 ft., IP 28,000,000 cu. ft. gas on open flow with condensate, shut-in pressure 5,775 psi.

LOS INDIOS—Hidalgo, March; Baldridge & King et al 10 W. L. Goldston, Santa Anita grant, TD 7,252 ft., "J" sand, perforations 6,486-6,511 ft., IP 2,800,000 cu. ft. gas on open flow, shut-in pressure 2,582 psi.

MERCEDES—Hidalgo, August; V. E. Cook, trustee 1 R. E. Barrow, Farm Tract 2349, North Capisallo subdivision, dual completion; TD 8,938 ft., perforations 7,140-50 ft., IP 14,000,000 cu. ft. gas on open flow; perforations 7,038-53 ft., IP 72 bbl., 9/64-in. choke, gravity 41.9°.

MIDWAY—San Patricio, February; F. M. Boykin et al 2 Dee Smith, Section 73, George H. Paul's subdivision of Coleman-Fulton Pasture lands, a rework job, formerly oil producer, total depth 5,736 ft., perforations 3,382-90 ft., IP 51,500,000 cu. ft. gas on open flow, shut-in pressure 1,450 psi., no water.

MORGAN—San Patricio, September; Southern Minerals Corp. 1 T. C. Hill et al, George Morris Survey, 2,250 ft. west of A. O. Morgan 1 Crabb (discovery), 3 miles west of Sinton, TD 7,502 ft., perforations 6,796-99 ft., IP 55 bbl., ⅛-in. choke, gravity 37°.

NORTH MINNIE BOCK—Nueces, October; The Atlantic Refining Co. 1 Bickler & Mosely, Section 53, George H. Paul's subdivision of Driscoll ranch, Joaquin Lopez de Herrera Survey, total depth 8,504 ft., perforations 7,958-88 ft., IP 9,500,000 cu. ft. gas on open flow plus condensate, shut-in pressure, 3,406 psi.

NORTH SUN—Starr, January; Sun Oil Co. 1 Ramon Olivares et al, Santa Teresa grant, TD 6,835 ft., perforations 4,500-07 ft., IP 10,500,000 cu. ft. gas on open flow, shut-in pressure 1,900 psi., no water.

NUECES BAY—Nueces, April; Phillips Petroleum Co. 1 Nueces Bay-State, State Tract 706, Nueces Bay, almost a mile northwest of gas production (now plugged) in Nueces Bay area, 2 miles northwest of Corpus Christi, TD 10,935 ft., perforations 3,290-3,300 ft., IP 10,050,000 cu. ft. dry gas on open flow, shut-in pressure 1,560 psi., no water.

ODEM—San Patricio, February; Seaboard Oil Co. of Delaware 1 W. M. Spessard, C. C. Hornsby Survey, 3 miles southwest of Odem, TD 8,872 ft., perforations 6,890-6,900 ft., IP 4,320,000 cu. ft. gas on open flow, spray of condensate, shut-in pressure 2,440 psi., no water.

PREMONT—Jim Wells, March; Barnsdall Oil Co. 1 T. T. San Miguel, Section 80, R. P. Haldeman subdivision, Seeligson ranch, SK&K Survey, A-458, 11 miles northwest of Premont, TD 5,200 ft., perforations 3,430-40 ft., IP 55 bbl., gravity 23°.

PREMONT—Jim Wells, March; Barnsdall Oil Co. 1 Thirkell, Section 77, R. P. Haldeman subdivision of Seeligson ranch, SK&K Survey, TD 6,113 ft., perforations 4,421-42 ft., IP 4,500,000 cu. ft. gas on open flow, shut-in pressure 1,771 psi., no water.

PREMONT, EAST—Jim Wells, February; Magnolia Petroleum Co. 111 A. A. Seeligson, James H. Houghton Survey, 4 miles northwest of Premont, TD 6,114 ft., perforations 4,843-48 ft., IP 68 bbl., ⅛-in. choke, gravity 36.8°.

PREMONT, EAST—Jim Wells, September; Magnolia Petroleum Co. 116 A. A. Seeligson, Section 216, J. F. Dunn Survey, A-137, McCartney sand, TD 6,100 ft., perforations 3,720-29 ft., IP 73 bbl., 9/64-in. choke, gravity 21.6°.

SARITA—Kenedy, October; Humble Oil & Refining Co. B-5 John G. Kenedy, Jr., El Paistle Grant, 3½ miles northeast of Sarita, TD 2,420 ft., top pay 2,278 ft., perforations 2,278-88 ft., IP 8,200,000 cu. ft. gas on open flow, shut-in pressure 1,020 psi.

SOUTH LONGHORN—Duval, April; Hiawatha Oil & Gas Co. A-3 Leroy Denman, Santos Garcia Survey, 1 mile southwest of Longhorn field, dual completion, TD 5,840 ft., perforations 4,233-37 ft. (new pay), Lower Cole sand, IP 72 bbl., 5/32-in. choke, gravity 39.8°; perforations 5,782-86 ft., IP 55 bbl., 7/64-in. choke, gravity 41.2°.

SOUTH LONGHORN—Duval, March; Hiawatha Oil & Gas Co. A-4 Leroy Denman, Santos Garcia grant, 4¼ miles east of Realitos, TD 5,804 ft., perforations 4,186-90 ft., IP 58 bbl., 7/64-in. choke, gravity 24°.

SOUTH LONGHORN—Duval, February; Hiawatha Oil & Gas Co. A-2 Leroy Denman, Santa Garcia grant, 4 miles east of Realitos, dual completion, Cole sand (new pay), TD 5,850 ft., perforations 4,195-4,200 ft., IP 66 bbl., 5/32-in. choke, gravity 42°; Hiawatha sand, Cockfield (new pay), perforations 5,782-5,787 ft., IP 89 bbl., 5/32-in. choke, gravity 45.6°.

SQUIRE—Duval, January; Santa Clara Oil Co. & John F. Camp & Sons 8-C James F. Welder heirs, M. C. Nunez Survey 4, Pettus sand, TD 3,890 ft., perforations 3,757-59½ ft., IP 93 bbl., 3/16-in. choke, gravity 35°.

WEST SINTON—San Patricio, April; A. O. Morgan Oil Co. & Arnold O. Morgan 1 W. I. Thomas, J. J. Welder subdivision, in John Pollan Survey, TD 3,507 ft., perforations 1,295-1,302 ft., IP 65 bbl. on jet, gravity 19.6°.

EAST TEXAS

(DISTRICTS 5 AND 6)

NEW POOLS

ALBA—Wood, May; (revived), Billy Bridewell 1 G. K. McKenzie, Jason Sherman Survey, 1 mile northeast Alba, sub-Clarksville, 4,028-4,123 ft., IP 50 bbl.

GOSSETT—Kaufman, August; T. D. Humphrey 1 Annie Mae Tuggle, E. D. Fitzgerald Survey, 5 miles northwest Maybank, Rodessa, 6,258-62 ft., IP 68 bbl.

LINDALE—Smith, April; Magnolia Petroleum Co. and Sinclair Prairie Oil Co. 1 R. W. Fair, William Schofield Survey, 3 miles southwest Lindale, Rodessa, 9,512-72 ft., IP 75 bbl., distillate.

MITCHELL CREEK—Hopkins, August; Shell Oil Co., Inc., 1 J. L. Hedrick, Geo. B. Yalyard Survey, 6 miles southeast Sulphur Bluff, Paluxy sand, 4,500-06 ft., IP 118 bbl.

PATROON—Shelby, July; Humble Oil & Refining Co. 1-C Pickering, James Rowe Survey, 2 miles northeast Patroon, upper Glen Rose, 5,164-92, 5,198-5,212 ft., IP 109 bbl.

WECHES—Houston, September; A. D. Adams 1 Lula A. Holcomb, Daniel McLean Survey, 2¼ miles southwest Weches, Woodbine, 5,742 ft., IP 111 bbl.

UNNAMED—Grayson, January; Standard Oil Co. of Texas 1 J. M. Head estate, J. Jennings Survey, 2 miles northwest Sherman, pay 3,296-3,306 ft., IP 256 bbl.

UNNAMED—Grayson, January; Standard Oil Co. of Texas 1 Mary H. Rifenburg, John Jennings Survey, 1 mile northeast Sherman, pay 4,362-99 ft., IP 109 bbl.

UNNAMED—Smith, October; Delta Drilling Co. 1 Max Price, Oliver Anderson Survey, 3½ miles southwest Tyler, Paluxy, 7,572-7,608 ft., IP 89 bbl.

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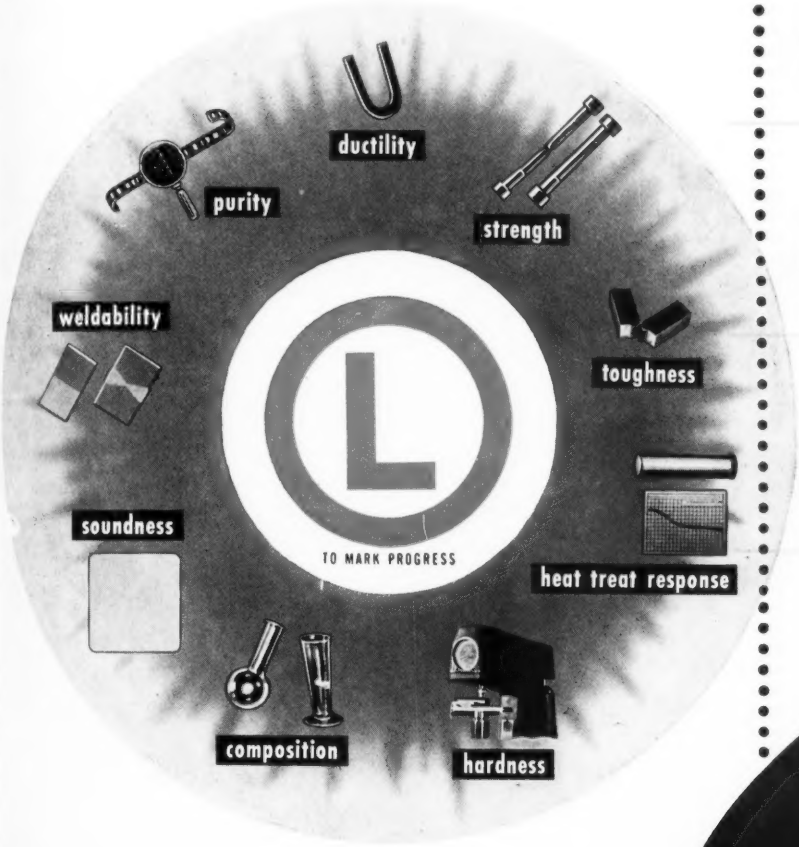

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NEW PAYS

BLACKFOOT—Anderson, January; The Texas Co. 1 R. F. Broadway, 2 miles east Blackfoot, south offset to discovery, Rodessa, 8,972-92 ft., IP 41 bbl.

CHAPEL HILL—Smith, January; Chapel Hill Gas System 2 J. B. Yancey, John Dillard Survey, 14 miles southeast Tyler, Paluxy sand, 5,594-5,615 ft., IP 225 bbl.

COKE—Wood, April; J. C. Hawkins 1 J. M. Clark, Berry Smith Survey, sub-Clarksville, 4,056-4,114 ft., IP 128 bbl.

YANTIS—Wood, January; Humble Oil & Refining Co. 1 P. M. Rhodes, southwest 1 Rio Oil Corp., Eagleford, 4,216-27 ft., IP 63 bbl.

NORTH CENTRAL TEXAS

(DISTRICTS 7-B AND 9)

NEW POOLS

AKENS—Jones, March; Geochemical Surveys, Inc., 1 J. R. Simpson, Section 18, Block 16, T&P Survey, 4 miles southwest Hawley, Hope limestone, 2,271-76 ft., IP 119 bbl.

ALLAR—Young, April; Warren Oil Corp. 1 Allar Co. "K," southwest corner of county, Section 1653, TE&L Survey, Caddo, 3,634-37 ft., IP 174 bbl.

ANSON—Jones, September; Carl Robinson 1 J. H. Scott "A," Section 14, OAL Survey, 2 miles northeast Anson, Canyon sand, 3,592-3,606 ft., IP 164 bbl.

ARCHER COUNTY REGULAR—Archer, September; Stewart & Grisham 2 Belle Wisdom estate, Block 123, Jose Ostane Survey, 2 miles north Archer City, sand, 1,168-75 ft., IP 55 bbl.

ARCHER COUNTY REGULAR—Archer, October; Fain & McGaha 1 W. L. King, Wm. Henry Survey, 2 miles east Archer City, Strawn sand, 3,752-80 ft., IP 80 bbl.

BARTLETT—Jones, January; Ungren & Frazier 1 H. L. Bartlett, Section 43, Block 2, SPRR Survey, 10 miles southwest Anson, Swastika sand, 3,230-42 ft., IP 176 bbl.

BROWN COUNTY REGULAR—Brown, May; W. C. Estes 1 R. E. Blakr, Block 17, Jessee Dickinson Survey, 2 miles north May, Marble Falls, 2,872-92 ft., IP 70 bbl.

BURNS - JONES—Archer, June; L. T. Burns 1 G. & C. Prideaux, Section 1835, TE&L Survey, 8 miles southwest Windthorst, Strawn sand, 3,168-75 ft., IP 125 bbl.

CHICO—Wise, January; Cities Service Oil Co. 1 B. O. Manning, J. Tarleton Survey, 2 miles west Chico, conglomerate, 5,113-5,235 ft., IP 295 bbl.

CHICO, WEST—Wise, June; Kingwood Oil Co. 1 R. O. Garnett, G. W. Egery Survey, 4 miles northwest Chico, conglomerate, 5,338-54 ft., IP 260 bbl.

GIBSON—Taylor, Steptember; Geochemical Surveys, Inc., 1 D. P. Moore, League 147, Grimes County School lands, 1½ miles southeast Merkel, Flippen lime, 2,552-60 ft., IP 90 bbl.

GRACE—Clay, August; Grace & Grace 1 Otis Smith, H. Tucker Survey, 1 mile northwest Shannon, Caddo, 5,420-70 ft., IP 139 bbl.

HAMMON—Wichita, August; W. H. Hammon and Warren Oil Corp. 2-A T. J. Cole, Block 10, Palo Pinto County School lands, 6 miles north Holliday, pay 2,952-63 ft., IP 60 bbl.

KIRK—Comanche, January; T. A. Kirk 1 S. D. Mears, William DeMoss Survey, 2 miles east Gorman, Marble Falls, 2,790-2,811 ft., IP 308 bbl.

KLEINER—Eastland, June; Lone Star Producing Co., 1 Chas. K. Kleiner "A," Section 81, Block 4, H&TC Survey, 2 miles north Cisco, Mississippi, 4,000-14 ft., IP 204 bbl.

LAKE WICHITA CADDO—Wichita, August; Consolidated Oil Co. 3 Alice Daves, Block 14, League 2, Denton County School lands, 7 miles southwest Wichita Falls, Caddo, 5,184-98 ft., IP 1,050 bbl.

MALLARD—Montague, February; L. W. Barrett 1 McCall & Fooshee, J. G. Cox Survey, 1¾ miles southeast Mallard, Bend conglomerate, 6,400-10 ft., IP 208 bbl.

MARRS—Throckmorton, January; J. H. Snowden 1 Mrs. Fannie Marrs, Section 289, BBB&C Survey, 1½ miles southeast Throckmorton, Marble Falls, 4,724-34 ft., IP 66 bbl.

McCAULLEY, WEST.—Fisher, March; Humble Oil & Refining Co. 1 W. F. Davidson, Section 59, Block 1, HT&B Survey, 1¾ miles west of McCaulley, Noodle Creek, 3,161-77 ft., IP 141 bbl.

McKEICHAN—Throckmorton, September; R. S. LeSage 1 Will McKeichan, Comanche Indian reservation, 3 miles southwest Throckmorton, Mississippi, 4,480-4,510 ft., IP 150 bbl.

MILLER—Montague, January; Continental Oil Co. 1 C. P. Miller, Section 21, Limestone County school lands, 1 mile west Stoneburg, Bend conglomerate, 6,196-6,212 ft., IP 684 bbl.

MILLIORN—Callahan, July; Ungren & Frasier 1 W. E. Milliorn, Section 20, BBB&C Survey, 6 miles southwest Clyde, sand, 1,322-30 ft., IP 94 bbl.

MORRISETT—Callahan, September; Fresno Oil Co. 1 J. M. Morrisett, Block 14, T&P Survey, northwest corner of county, sand, 1,709-16 ft., IP 62 bbl.

QUEENS PEAK—Montague, January; The Texas Co. 1 D. B. Benson, Section 1, Limestone County School lands, 4 miles northwest Bowie, Caddo, 6,236-44 ft., IP 298 bbl.

REFINERY—Wichita, July; Continental Oil Co. 1 Hausler Brothers, J. Pike Survey, 1 mile northeast Wichita Falls, conglomerate, 5,688-94 ft., IP 181 bbl.

REIDENBACH—Taylor, June; West Central Drilling Co. 1 Ennis Reidenbach, League 146, Grimes County School lands, 10 miles south Merkel, Cook (?) limestone, 2,498-2,503 ft., IP 80 bbl.

STAMFORD—Haskell, March; Pan American Producing Co. 1 A. E. Clark, C. B. Clough Survey, 3 miles northwest Stamford, King sand, 2,351-60 ft., IP 44 bbl.

THROCKMORTON COUNTY REGULAR—Throckmorton, March; Woodley Petroleum Co. 1 Ludie Diekie, Section 938, TE&L Survey, 2½ miles northwest Woodson, Caddo, 4,178-90 ft., IP 107 bbl.

THROCKMORTON COUNTY REGULAR—Throckmorton, September; Fred M. Manning, Inc., 1 Roy H. King, Section 268, BBB&C Survey, 8 miles north Throckmorton, Caddo, 4,695,4,710 ft., IP 192 bbl.

WEST ODELL—Wilbarger, July; National Associated Petroleum Co. 1 D. E. Davis, Section 3, Block 10, H&TC Survey, 1 mile south Odell, Palo Pinto, 4,741-75 ft., IP 177 bbl.

WRIGHT—Throckmorton, January; J. H. Snowden 1 T. J. Wright, Section 294, BBB&C Survey, 2½ miles southeast Throckmorton, Mississippi, 4,749-84 ft., IP 192 bbl.

UNNAMED—Callahan, February; Al P. Groebe 1-B Garland Gary, W. H. Anderson Survey, 2 miles southeast Cross Plains, Ellenburger, 3,672-82 ft., IP 123 bbl.

UNNAMED—Callahan, May; Star Oil Co. 2 Taylor-Ramsey, Section 319, SPRR Survey, 5 miles south Putnam, Ellenburger, 3,926-53 ft., IP 163 bbl.

UNNAMED—Clay, March; Wichita River Oil Co. and Phillips Petroleum Co. 1 Bryant Edwards, S. C. Beldon Survey, 5½ miles east Henrietta, Strawn, 4,099-4,107 ft., IP 169 bbl.

UNNAMED—Jack, May; Cox Drilling Co. 1 J. T. Roney, Section 3326, TE&L Survey, 10 miles southeast Antelope, Caddo, 4,580-4,602 ft., IP 37 bbl. (1½ hours).

UNNAMED—Jack, January; Cox Drilling Co. 1 Spearman Estate, Section 2, SPRR Survey, 9 miles southwest Antelope, Caddo, 4,814-30 ft., IP 24 bbl. (2 hours).

UNNAMED—Jack, November; Star Oil Co. 1 T. H. Cherryhomes, C. J. C. O'Connor Survey, 4 miles southeast Cundiff, conglomerate, 5,472-90 ft., IP 312 bbl.

UNNAMED—Jones, September; Richard L. Davisson, Jr., 1 Hugh Roberts, Section 10, Block 14, T&P Survey, 1½ miles east Nugent, Swastika (?) sand, 1,662-76 ft., IP 109 bbl.

UNNAMED—Jones, August; S. B. Roberts 1 Roy E. Prichard, G. Martinez Survey, 2½ miles north Hawley, sand, 2,082-95 ft., IP 118 bbl.

UNNAMED—Jones, August; Sellers & Brown 1 W. D. Minter, Section 11, Block 15, T&P Survey, 3 miles north Hawley, pay 2,025-32 ft., IP 880 bbl.

UNNAMED—Palo Pinto, May; Crader Oil Co. 2 E. P. Costello, M. Castleman Survey, 3 miles northwest Pickwick, gas sand, 2,287-2,300 ft., IP 4,500,000 cu. ft.

UNNAMED—Montague, November; Continental Oil Co. 1 L. M. Staley, R. Crawford Survey, 3 miles northwest Ringgold, conglomerate, 5,970-80 ft., IP 118 bbl.

UNNAMED—Montague, November; Russell Maguire 1 R. A. Stewart, Block 19, J. Y. Costello Survey, 3½ miles west Nocona, conglomerate, 5,352-63 ft., IP 190 bbl.

UNNAMED—Shackelford, March; Oil Well Drilling Co. 1 M. Davis, Section 36, Block 12, T&P Survey, 5 miles southwest Albany, Ellenburger, 4,693-4,715 ft., IP 162 bbl.

UNNAMED—Shackelford, April; Kadane-Griffith Oil Co. 1 J. N. Davis, Section 1546, TE&L Survey, 11 miles east Albany, Caddo, 4,434-50 ft., IP 136 bbl.

UNNAMED—Shackelford, May; M. J. Mitchell 1 T. C. Partney, Section 17, BAL Survey, 2 miles south Albany, Caddo, 4,322-32 ft., IP 232 bbl.

UNNAMED—Shackelford, November; McElroy Ranch Co. 1 Pittman & Reynolds, Section 2, Block 11, T&P Survey, 7 miles east Albany, Ellenburger, 4,533-38 ft., IP 224 bbl.

UNNAMED—Stephens, January; Star Oil Co. 2 Walker-Buckler, Nancy Williams Survey, 7 miles south Woodson, Mississippi, 4,480-4,502 ft., IP 176 bbl.

UNNAMED—Stephens, April; Fred Manning, Inc., 1-B W. T. Moore, Section 2256, TE&L Survey, 10 miles southwest Breckenridge, Caddo, 3,325-30 ft., IP 228 bbl.

UNNAMED—Stephens, May; Kadane-Griffith Oil Co. 1 G. DeLoffose, Section 9, T&P Survey, 11 miles east Albany, Ellenburger, 4,456-69 ft., IP 130 bbl.

UNNAMED—Stephens, May; The Texas Co. 1 A. M. Moon, Section 1306, TE&L Survey, 8 miles northeast Breckenridge, Marble Falls, 4,130-60 ft., IP 11,000,000 cu. ft. gas.

UNNAMED—Stephens, February; Texas Pacific Coal & Oil Co. 1 C. L. Trammell, Section 42, Block 8, T&P Survey, 6½ miles southwest Breckenridge, Mississippi, 4,127-32 ft., IP 4,200,000 cu. ft. gas.

UNNAMED—Stephens, September; Texas Pacific Coal & Oil Co. 2 Texas Land Trust "B," Section 7, Block 5, T&P Survey, 6 miles southwest Eliasville, Mississippi, 4,282-92 ft., IP 160 bbl.

UNNAMED—Taylor, November; Sojourner Drilling Co. 1 D. O. Huddleston, League 147, Grimes County School lands, 2 miles south Merkel, Flippen lime, 2,783-87 ft., IP 124 bbl.

UNNAMED—Wise, November; Signal Oil & Gas Co. 1 Jack Daly, J. F. Williamson Survey, 3 miles south Cottondale, Ellenburger, 6,512-22 ft., IP 170 bbl. distillate.

UNNAMED—Young, January; Nu Enamel Oil Corp. 1 R. L. Morrison, Section 465, TE&L Survey, 6 miles northwest Graham, Caddo, 4,632-51 ft., IP 129 bbl.

UNNAMED—Young, April; Howell & Howell 1 Mellie Prideaux, A. McMillen Survey, 7 miles northwest Markley, sand, 2,974-85 ft., IP 146 bbl.

UNNAMED—Young, June; American Republics Corp. 1 R. B. Jones, Section 1648, TE&L Survey, 3½ miles west Murray, Caddo, 3,728-36 ft., IP 174 bbl.

UNNAMED—Young, July; Allar Co. 1 Watson heirs, J. Saunders Survey, 4½ miles southeast Murray, sand, 2,615-17 ft., IP 145 bbl.

UNNAMED—Fisher, December; Lion Oil Co. 1 Hale, League 317, El Paso County School lands, 2 miles north Longworth, Flippen lime, 3,538-41 ft., IP 140 bbl.

UNNAMED—Jones, December; T. D. Humphrey 1 Annett Lee Gray, Section 25, D&DA Survey, 2 miles southwest Avoca, King sand, 2,110-22 ft., IP 147 bbl.

UNNAMED—Throckmorton, December; M. A. Grisham 1 Arlene Gregory, Section 1,193, TE&L Survey, 8 miles west Woodson, Mississippi, 4,675-4,720 ft., IP 475 bbl.

UNNAMED—Young, December; Hanlon Boyle, Inc., 1 K. D. Oates, Section 1,672, TE&L Survey, 2 miles southwest Murray, pay 2,906-12 ft., IP 96 bbl. (12 hours).

NEW PAYS

ACME—Clay, March; S. D. Johnson 1

C. W. Scaling, Section 3, HT&B Survey, 4½ miles northwest Deer Creek, Simpson (?), 5,798-5,838 ft., IP 172 bbl.

GIBSON — Taylor, March; Geophysical Surveys, Inc., et al, 1 T. J. Bird, Block 22, Grimes County School lands, 1 mile east Merkel, Dotham sand, 2,227-34 ft., IP 228 bbl.

WEST TEXAS

NEW POOLS

ADDIS STRAWN—Ector, August; Stanofind Oil & Gas Co. 1 E. F. Cowden "D," Section 40, Block 43, T&P Survey, ¾ mile southwest of Addis Deep field, Pennsylvanian, 9,205-24 ft., IP 202 bbl.

ARICK—Hale, April; General American Oil Co. 1 A. F. Byrd, Section 17, Block K, TTRR Survey, 2 miles northeast of Petersburg, Pennsylvanian, 5,835-95 ft., IP 118 bbl.

ARLEDGE—Coke, January; Sun Oil Co. 1 J. W. Arledge, Section 261, Block 1-A, H&TC Survey, 4½ miles northwest of Sanco, Marble Falls, 6,598-6,617 ft., IP 176 bbl.

BENEDUM — Upton, January; Slick-Urschel Oil Co. and Plymouth Oil Co. 1 D. L. Alford, Section 50½, Block Y, P. B. Scott Survey, 12 miles northeast of Rankin, Ellenburger, 11,021-12,022 ft., IP 833 bbl.

BRONTE—Coke, August; Hickock & Reynols 1 E. C. Rawlins, Section 453, Block 1-A H&TC Survey, 1 mile west of Bronte, Palo Pinto, 4,348-56 ft., IP 72 bbl.

BROWN—Gaines, May; Anderson Prichard Oil Corp. 1 E. H. Jones, Section 21, Block A-7, PSL Survey, 5 miles south of Jones Ranch field, Glorietta, 6,030-6,130 ft., IP 195 bbl.

C-BAR SILURIAN—Crane, January; Gulf Oil Corp. 1-S1-A Hattie Connell, Section 26, Block B-22, PSL Survey, 3½ miles north of Sand Hills field, Silurian 8,355-65 ft., IP 1,805 bbl.

CHAPMAN—Reeves, July; Ford Chapman 1 Standard Oil Co. of Texas, Section 46, Block 57, T&P Survey, 3½ miles southwest of Orla, Delaware sand 2,895-2,906 ft., IP 107 bbl.

COSBY-BECTEL—Reeves, April; C & B Oil Co. 1 Ollie P. Anderson, Section 18, Block 2, H&GN Survey, northwest corner, sand 3,835-3,906 ft., IP 73 bbl.

DERMOTT—Scurry, November; Standard Oil Co. of Texas 1 Mrs. Jessie Brown, Section 440, Block 97, H&TC Survey, 8½ miles north of Snyder, reef lime, 6,260-6,412 ft., IP 532 bbl.

DIXIELAND—Reeves, May; C & B Oil Co. 1 Monroe, Section 13, Block 2, H&GN Survey, 2 miles south of Dixieland, sand 3,853-85 ft., IP 82 bbl.

FREEMAN—Runnels, August; Geochemical Oil Co. 1 J. W. Freeman, Section 357, T. R. Webb Survey, 4½ miles southwest of Crews, pay 3,390-3,405 ft., IP 48 bbl.

GREEN — Tom Green, December; Plymouth Oil Co. 1 J. Wiley Green, Section 193, District 11, SPRR Survey, 15 miles southeast of San Angelo, Strawn, IP 362 bbl.

JENKINS—Gains, August; The Texas Co. et al 1 Jenkins, Section 4, Block A-25, PSL Survey, 5 miles west of Doss field, Devonian, 9,100-35 ft., IP 175 bbl.

KEYSTONE, SOUTH — Winkler, August; Gulf Oil Corp. 125-E Keystone Cattle Co., Section 29, Block B-2, PSL Survey, Tubb, 6,470-6,590 ft., IP 162 bbl.

MARVIN — Sterling, April; Anderson-Prichard Oil Corp. 1 Marvin F. Foster, Section 12, Block 15, H&TC Survey, 7 miles south of Sterling City, Wichita - Albany, 4,252-4,305 ft., IP 846 bbl.

MILLICAN — Coke, November; Sun Oil Co. 1 P. W. Millican, Section 230, Block 2, H&TC Survey, 10 miles west of Robert Lee, Pennsylvanian, 5,955-71 ft., IP 576 bbl.

ORIENT—Pecos, April; R. R. Herrell 1 W. C. Jackson-State, Section 102, Block 8, H&GN Survey, 1 mile northwest of Pecos Valley field, Sand 1,797-1,822 ft., IP 66 bbl.

PARKER, WEST—Andrews, June; Humble Oil & Refining Co. 12 J. E. Parker, 3½ miles west of Martin field, Section 2, Block A-54, PSL Survey, Devonian, 8,390-8,420 ft., IP 636 bbl.

PETERSBURG, WEST — Hale, February; Humble Oil & Refining Co. 1 J. A. Lutrick, Section 14, Block D-8, EL&RR Sur., 6½ miles northeast of Abernathy, Cisco, 7,908-87 ft., IP 162 bbl.

RUSSELL DEVONIAN, NORTH—Gaines, November; Argo Oil Corp. 1-N E. H. Jones, Section 496, Block G, CCSD&RGNG Survey, 10 miles southwest of Denver City, Devonian, 11,125-80 ft., IP 690 bbl.

SAN BENITO—Coke, June; Alan Guiberson 1 Lassiter, Section 308, Block 1-A, H&TC Survey, 3 miles northwest of Sanco, Marble Falls, 6,495-6,528 ft., IP 222 bbl.

SCHATTELL—Scurry, July; Sun Oil Co. and Humble Oil & Refining Co. 1 Emil Schattell, Section 186, Block 97, H&TC Survey, 7 miles southwest of Snyder, Canyon, 6,816-91 ft., IP 480 bbl.

SEMINOLE, WEST—Gaines, July; Cities Service Oil Co. and Atlantic Refining Co. 1 Proctor, Section 355, Block G, CCSD&-RGNG Survey, 10 miles northwest of Seminole, San Andres 5,042-5,203 ft., IP 411 bbl.

SHAFTER LAKE CLEARFORK — Andrews, July; Phillips Petroleum Co. 1-T Texas University, Section 36, Block 13, University Lands, 1 mile south of Devonian production, Clearfork, 6,910-50 ft., IP 26 bbl.

SPADE — Hockley, June; Honolulu Oil Corp. 1-A Ellwood Estate, Section 13, Block A, R. M. Thompson Survey, 3½ miles north of Smyer, Glorietta, 5,875-6,014 ft., IP 236 bbl.

TENNYSON, WEST — Coke, May; Seaboard Oil Co. of Delaware and Southern Minerals 1 M. G. Reed, Section 1, HE&WT Survey, 9 miles west of Tennyson, Ellenburger, 6,182-6,219 ft., IP 176 bbl.

VEALMOOR — Howard, February; Seaboard Oil Co. of Delaware 1-B J. C. Caldwell, Section 32, Block 32, T&P Survey, 9½ miles from west and 1 mile from north county lines, Pennsylvanian, 7,934-74 ft., IP 200 bbl.

WILSHIRE — Upton, December; Wilshire Oil Co. 23-148 McElroy ranch, Section 148, Block E, CCSD&RGNG Survey, 5 miles east of McElroy field, Wolfcamp 7,800-8,005 ft., IP 227 bbl.

UNNAMED—Andrews, December; Champlin Refining Co. 1-F University, Section 34, Block 12, University lands, 20 miles west Andrews, Clear Fork, 7,131-67 ft., IP 80 bbl.

UNNAMED—Andrews, September; Placid Oil Co. 1 E. G. Nix, Section 21, Block A-47, PSL Survey, 12½ miles west of Andrews, Tubb, 6,900-7,000 ft., IP 85 bbl.

UNNAMED—Cochran, June; Seaboard Oil Co. 1 F. O. Maston, Labor 18, League 152, Randall County School Lands, 8 miles southeast of Bledsoe, San Andres, 4,923-5,001 ft., IP 184 bbl.

UNNAMED — Cochran, July; Anderson-Prichard Oil Corp. 1 Dorothy Slaughter, League 114, Potter County School Lands, 4½ miles south of Lehman, San Andres, 4,849-60 ft., IP 65 bbl.

UNNAMED—Cochran, July; C. U. Bay 1 Ralph Gardner, League 131, Carson County School Land, 5 miles southeast of Lehman, San Andres, 4,970-5,010 ft., IP 88 bbl.

UNNAMED—Crane, June; Standard Oil Co. of Texas 1 Hattie A. Reynolds, Section 22, Block 3, H&TC Survey, 5 miles north of Abell field, Waddell sand, 5,831-37 ft., IP 880 bbl.

UNNAMED—Hockley, October; Woodley Petroleum Co. 1 J. J. Alderson, Section 10, Block A, R. M. Thompson Survey, 3 miles northeast of Smyer, Glorietta, 5,825 ft., IP 156 bbl.

UNNAMED—Sterling, June; Humble Oil & Refining Co. 1 I. L. Ellwood Estate "B," Section 36, Block 18, SPRR Survey, 5 miles northeast of Iolanthe, Ellenburger, 7,970-8,000 ft., IP 112 bbl.

NEW PAYS

BEDDO—Runnels, August; E. S. Price 1 Claude Brookshier, J. H. Parramore Survey, sand, 3,747-50 ft., IP 203 bbl.

BENEDUM — Upton, September; Fred Turner, Jr., and J. M. Hewgley 1 Rosa Halff Barnett, Section 50½, P. B. Scott Survey, 3 miles west of Alford, Pennsylvanian, 9,982-10,180 ft., IP 747 bbl.

BENEDUM SILURIAN — Upton, October; Republic Natural Gas Co. 1-A Barnett, Section 40, Block Y, TCRR Survey, Fusselman, 11,242-396 ft., IP 457 bbl.

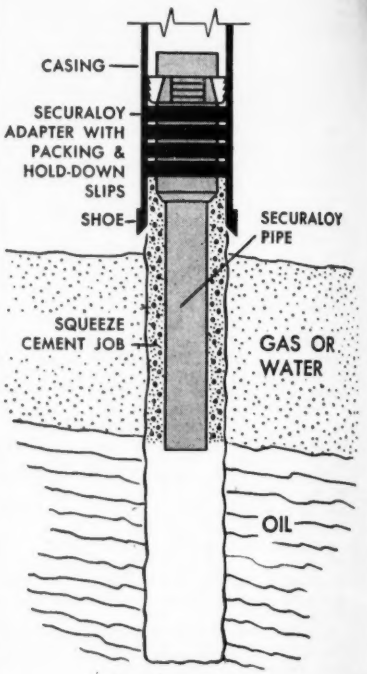
BLOCK 47—Crockett, March; Continental

USE OF SECURALOY SOLVES MANY PRODUCTION PROBLEMS

Securaloy pipe, which may be removed with chemicals or a drilling bit, is being used to solve many "difficult" production problems, such as correcting gas-oil ratios, water shutoffs and plug backs.

CORRECTING GAS-OIL RATIOS

This method is similar to that used in the case history shown on the opposite page except that the Securaloy pipe extends through the gas zone to the top of the oil zone.



Securaloy set on top of producing zone

This method is used where the entire oil zone can be produced from open hole and where it is not necessary to confine the oil production to selective strata. The hole through the oil zone is first filled with gravel. Securaloy pipe is run and squeeze cemented in position. When the cement has set, Securaloy cementing shoe and gravel are cleaned out and well is ready for production, with gas or water successfully under control.

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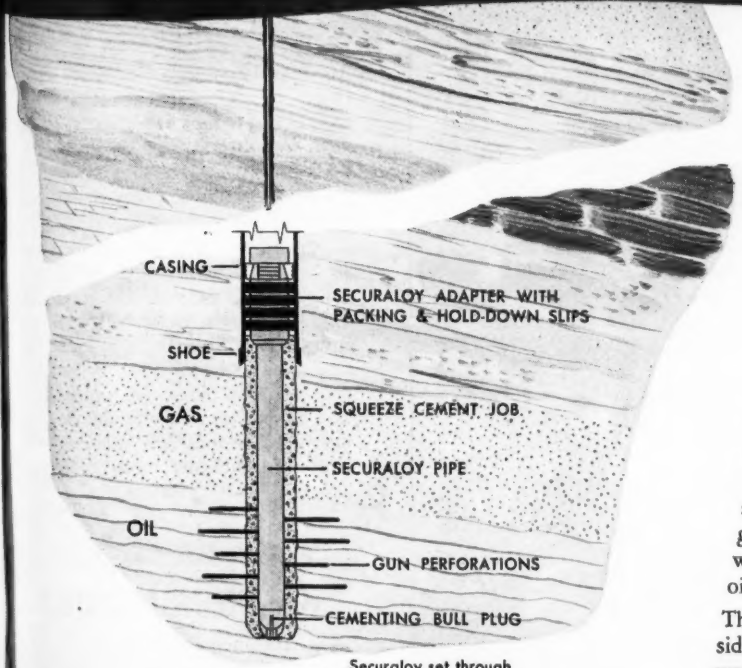
LOCATION: Texas
GAS-OIL RATIO: 300 to 1
PRODUCTION: 5-6 barrels per day on pump
QUESTION: How to increase production and lower gas-oil ratio by a simple and satisfactory remedial method

Too much gas—Too little oil?



Securaloy set through Producing Zone

When a Texas operator found his gas-oil ratio too high and production way down he determined that the positive way to correct this situation was to use Securaloy. You, too, can profit by using Securaloy to solve your gas-oil ratio problems.

This operator first tried a plastic squeeze job, but the well still made only 6 barrels per day. Then a cement squeeze job was performed, with the entire open hole left full of cement and then drilled out. This proved unsuccessful too!

Finally, the operator cemented Securaloy pipe through the gas-oil sands, as shown. Selective strata were gun perforated and acidized. The well was then completed for 80 barrels of oil per day with a 40 to 1 gas-oil ratio!

This same remedial method is now considered standard practice . . . Another example of the application of Securaloy to solve your production problems.

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Securaloy

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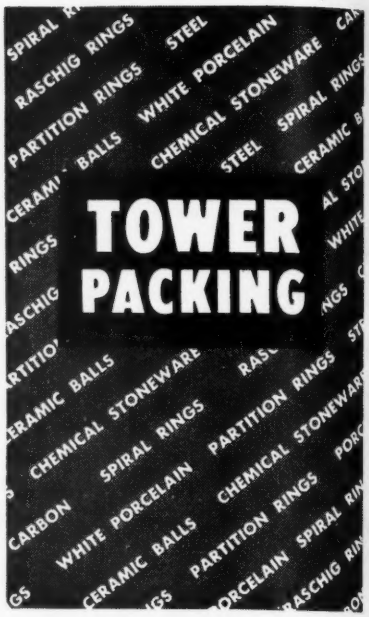

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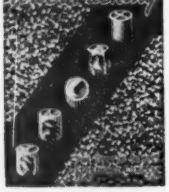

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U. S. STONEWARE
Akron 9, Ohio

Oil Co. 1 University A-13, Section 13, Block 47, University lands, 6 miles south of Barnhart field, Silurian, 9,210-9,300 ft., IP 104 bbl.

FULLERTON—Andrews, July; Mid-Continent Petroleum Corp. 9-9 University, Section 19, Block 13, University Survey, Wichita Albany, 7,890-7,925 ft., IP 482 bbl.

JORDAN—Ector, March; Gulf Oil Corp. 21-T W. E. Connell "B," Section 26, Block B-16, PSL Survey, Tubb, 5,242-70 ft., IP 817 bbl.

SHAFTER LAKE — Andrews, December; Sinclair Prairie Oil Co. 2-154 University, Section 24, Block 13, University lands, Ellenburger, 11,685-750 ft., IP 1,139 bbl.

TEXAS PANHANDLE

(District 10)

NEW POOLS

UNNAMED — Gray, November; L. A. Helms 1 A. H. Brown, Section 15, Block 30, H&GN Survey, 4 miles north of McLean, IP 25 bbl. per day from 2,616-2,716 ft.

SOUTHEAST NEW MEXICO

NEW POOLS

UNNAMED—Eddy, November; S. P. Yates 1-D State, SE SE SE 24-18s-27e sand, 1,985-2,022 ft., IP 50 bbl.

CROSS ROADS—Lea, May; Mid-Continent Petroleum Corp. 1 Sawyer, SE SE 27-9s-36e, Devonian, 12,115-215 ft., IP 900 bbl.

UNNAMED—Lea, January; Delfern Oil Co. 1 Lea-State, SE NW 8-17s-34e, San Andres, 4,673-4,723 ft., IP 111 bbl.

UNNAMED—Lea, March; Shell Oil Co., Inc. 1 Taylor-Glenn, NE SW 3-21s-37e, Drinkard, 6,720 ft., IP 360 bbl. distillate.

UNNAMED—Lea, March; Gulf Oil Corp. 6 C. E. LaMunyon, NE NE 28-23s-37e, McKee sand, 9,344-9,510 ft., IP 900 bbl.

UNNAMED—Lea, June; Devonian Oil Co. 1 Landreth, NE NW 18-9s-38e, sand, 4,938-83 ft., IP 2,750,000 cu. ft. sour gas.

UNNAMED—Lea, November; J. C. Clower 1 State, NW SE 16-21s-34e, Seven Rivers, 3,945-48 ft., IP 218 bbl.

UNNAMED—Lea, December; Continental Oil Co. 1 Warren unit B-29, NE SE 29-20s-38e, McKee and, 8,965-9,059 ft., IP 441 bbl.

NEW PAY

PENROSE-SKELLY—Lea, June; Rowan Drilling Co. 5 Will Cary, NE SE NW 22-22s-37e, Montoya, 7,140-50 ft., IP 213 bbl.

NORTH LOUISIANA

NEW POOLS

DRISCOLL—Bienville, August; Barnsdall Oil Co. 1 Davis Bros. Lumber, 7-16n-4w, Pettit, 6,769-6,800 ft., IP 100 bbl. distillate.

GORUM — Natchitoches, August; Victor P. Grage 1 Ambrose, 10-5n-6w, Wilcox, 5,788-91 ft., IP 93 bbl.

SALINE BAYOU—Catahoula, June; Hunt Oil Co. 1 Louisiana Delta, NW NW 6-4n-5e, Wilcox, 5,506-12 ft., IP 437 bbl.

TRUXNO—Union, June; Newton Oil Co. 1 Nale, 30-23n-1e, Nacatoch, 2,208-14 ft., IP 97 bbl.

NEW PAYS

ADA—Bienville, June; Carter Oil Co. 1 R. E. Woodard, NE NE 26-18n-8w, Pettit, 6,730-45 ft., IP 55 bbl. distillate.

EAST HAYNESVILLE — Claiborne, December; Hunt Oil Co. 1 A. O. Goodwin, SW SW 21-23n-7w, Smackover, 10,169-170 ft., IP 360 bbl. distillate.

SHONGALOO—Webster, December; Stanolind Oil & Gas Co. 1 Viola Mitchell unit, NE SE 31-23n-9w, Mitchell sand in Cotton Valley, 10,308-320 and 10,327-333 ft., IP 312 bbl. distillate.

SOUTH LOUISIANA

NEW POOLS

BAY BAPTISTE—Terrebonne, September; Union Producing Co. A-1 La Terre-State unit, 42-19s-19e, 1 mile southwest of South Lirette discovery well, 3 miles south of Lirette field production, TD 11,997 ft., perforations 10,503-511 ft., IP 4,754,000 cu. ft. gas, ¼-in. choke.

BAY JUNOP—Terrebonne, August; Union Oil Co. of California 1-9 State-LLE, 27-21s-14e, TD 4,777 ft., perforations 4,012-20 ft., IP 130 bbl., 9/64-in. choke, gravity 37.7°.

BELL CITY AREA — Calcasieu, April; Sohio Petroleum and General Crude Oil Co. 1-B Sweet Lake Land & Oil Co., 30-10s-6w, TD 10,843 ft., perforations 10,736-750 ft., IP 31 bbl. condensate and 2,115,000 cu. ft. gas, 10/64-in. choke, gravity 48°.

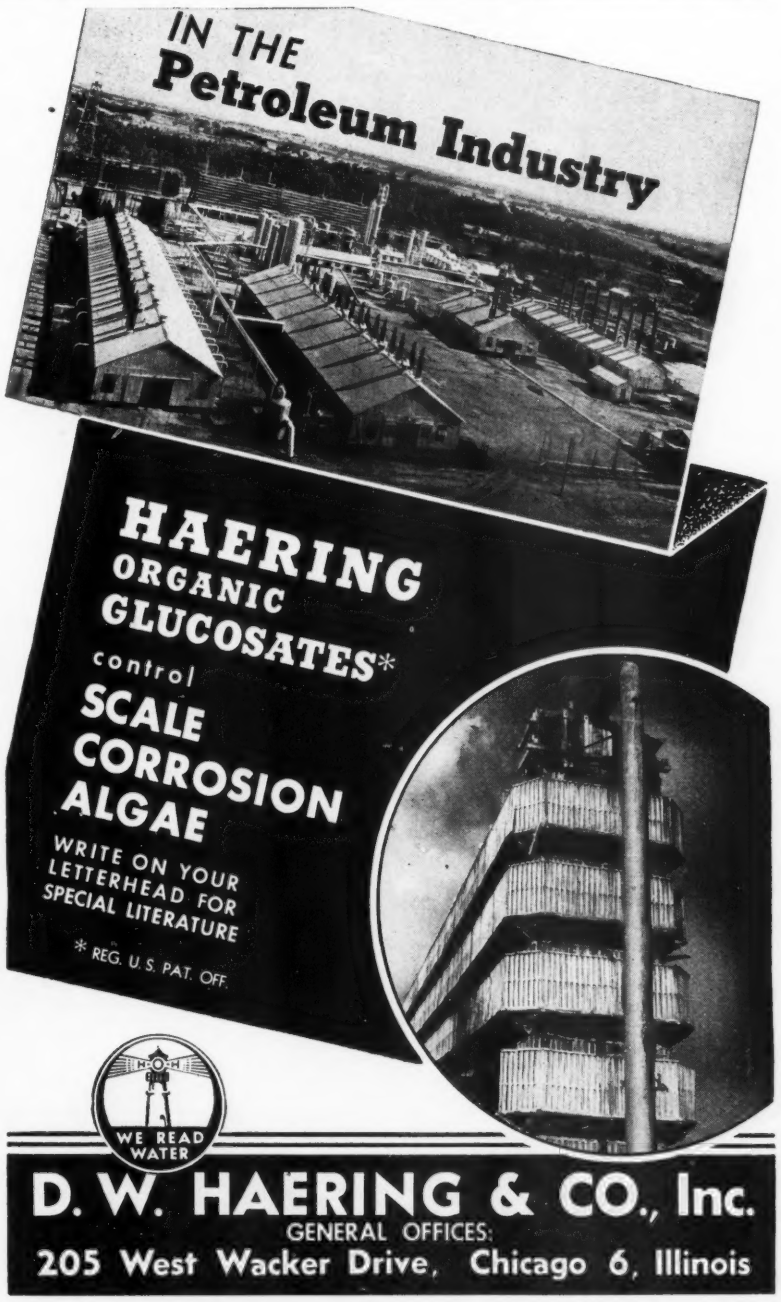
BLOCK 69 (Main Pass)—Plaquemines, August; The California Co. 1 State Lease 1276, Block 69, Tract 2767, Main Pass area of Gulf of Mexico, 6 miles east of Delta Duck field production and 15 miles southeast of Barnsdall et al Breton Sound gas discovery, TD 9,254 ft., perforations 5,848-57 ft., IP 216 bbl., 5/32-in. choke, gas-oil ratio 215, tubing pressure 670 psi., gravity 26.2°, no water. First offshore production since November 1947.

BLOCK 71—Vermilion, July; Superior Oil Co. A-1 Gulf of Mexico-State Lease 884, Block 71, Vermilion area, 22 miles south of Fresh Water Bayou field, 19 miles south of shore line in Gulf of Mexico, old well worked over, OTD 13,628 ft., reworked and drilled out to 9,680 ft., perforated 9,608-18 ft., IP 53 bbl. condensate and 7,024,000 cu. ft. gas, 20/64-in. choke, gas-condensate ratio 110,838, tubing pressure 3,800 psi., gravity 51.4°, no water.

BRETON SOUND AREA — Plaquemines, April; Barnsdall Oil Co. 1-36 Breton-State Lease 1230, Breton Sound area, 11 miles northeast of Grand Bay field production, Block 36, TD 10,600 ft., dry, perforations 4,130-42 ft., IP 2,360,000 cu. ft. gas, ¼-in. choke, shut-in, tubing pressure 1,620 psi., no water.

CANEY CREEK—Beauregard, September; Magnolia Petroleum Co. E-1 Doornbos-McPherson, 15-5s-8w, TD 8,750 ft., perforations 8,177-82 ft., IP 124 bbl., 7/64-in. choke, gravity 48.6°, no water.

EAST MOSS LAKE AREA — Calcasieu, November; Union Oil Co. of Calif. 1 D. C. Powell, 5-11s-9w, TD 9,303 ft., top sand 8,569 ft., perforations 8,569-74, IP 97 bbl., 6/64-in. choke, gravity 35.5°.



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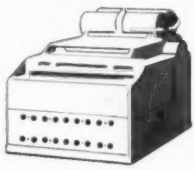

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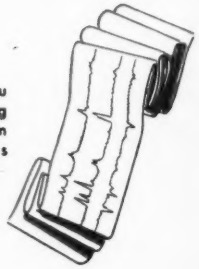

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HOLLY BEACH—Cameron, May; Magnolia Petroleum Co. 1 Abel West heirs, 7-15s-10w, TD 11,630 ft., perforations 10,817-822 ft., IP 55 bbl. condensate and 3,361,000 cu. ft. gas, 12/64-in. choke, gas-oil ratio 61,455, tubing pressure 3,325 psi., shut-in pressure 3,390 psi., gravity 53.2°, no water.

HURRICANE CREEK—Beauregard, January; Magnolia Petroleum Co. 1 Four C. McPherson, SE NW SE 26-5s-8w, TD 9,009 ft., perforations in Cockfield sand 8,415-20 ft., IP 120 bbl., through 6/64-in. choke, gas-oil ratio 875, tubing pressure 1,150 psi., gravity 43.8°, no water.

LAKE HATCH—Terrebonne, August; Union Oil Co. of California 1 Louisiana Land & Exploration Co., 8-18s-16e, TD 11,203 ft., perforations 7,896-7,902 ft., IP 235 bbl., 9/64-in. choke, gravity 35.7°.

LITTLE LAKE—Jefferson, June; Gulf Refining Co. A-1 L.L.E., 5-18s-23e, TD 12,072 ft., in original hole, sidetracked, TD 10,000 ft., perforations 9,889-94 ft., IP 69 bbl. condensate, ¼-in. choke, gas-condensate ratio 30,300, tubing pressure 3,350 psi., shut-in pressure 3,700 psi.

MARKSVILLE—Avoyelles, August; Hunt Oil Co. 1 Harry H. Edwards, 78-2n-4e, 3½ miles north of Marksville townsite, TD 9,117 ft., perforations 7,926-32 ft., Wilcox, IP 180 bbl., ⅛-in. choke, gas-oil ratio 1,060, no water, tubing pressure 1,450 psi., casing pressure 1,700 psi., gravity 48.1°.

MELVILLE—St. Landry, November; Sun Oil Co. 1 Swift, 23-4s-7e, 2½ miles southwest of Melville townsite and 10 miles north of Krotz Springs production, TD 12,500 ft., top sand 11,240 ft., perforations 11,340-345 ft., IP 190 bbl. condensate and 2,148,000 cu. ft. gas, 12/64-in. choke, gravity 54.8°.

NORTH GORDON—Beauregard, June; Barnsdall Oil Co. 2 Edgewood, 14-6s-10w, TD 9,300 ft., perforations 8,458-63 ft., IP 141 bbl. condensate, 10/64-in. choke, gas-condensate ratio 10,646, tubing pressure 2,575 psi., gravity 58.1°, no water.

POINTE A LA HACHE—Plaquemines, June; S. W. Richardson E-4 Delacroix Corp., 34-18s-14e, TD 11,313 ft., perforations 10,196-207 ft., IP 44 bbl. condensate and 4,350,000 cu. ft. gas, a 3/16-in. choke, gas-condensate ratio 53,400, tubing pressure 3,950 psi., shut-in pressure 4,000 psi., gravity 53.8°, no water.

SOUTH BANCROFT—Beauregard, November; Roeser & Pendleton, Inc., et al 1 Columbia Land & Timber Co., 27-6s-13w, south of Bancroft field, TD 11,090 ft., top sand 10,242 ft., perforations 10,242-252 ft., IP 223 bbl., ¼-in. choke, gravity 46.7°.

SOUTH CROWLEY—Acadia, June; Sun Oil Co. 1 Leger, 22-10s-1e, TD 11,514 ft., perforations 8,144-56 ft., IP 252 bbl., 3/16-in. choke, gas-oil ratio 4,841, tubing pressure 2,200 psi., gravity 25.7°, no water.

SOUTH GRAND CHENIER—Cameron, October; Sohio Petroleum Co. 1 S. W. Sweeney, 22-15s-6w, TD 13,067 ft., perforations 8,250-75 ft., IP no gage, 10/64-in. choke, shut-in pressure 3,100 psi.

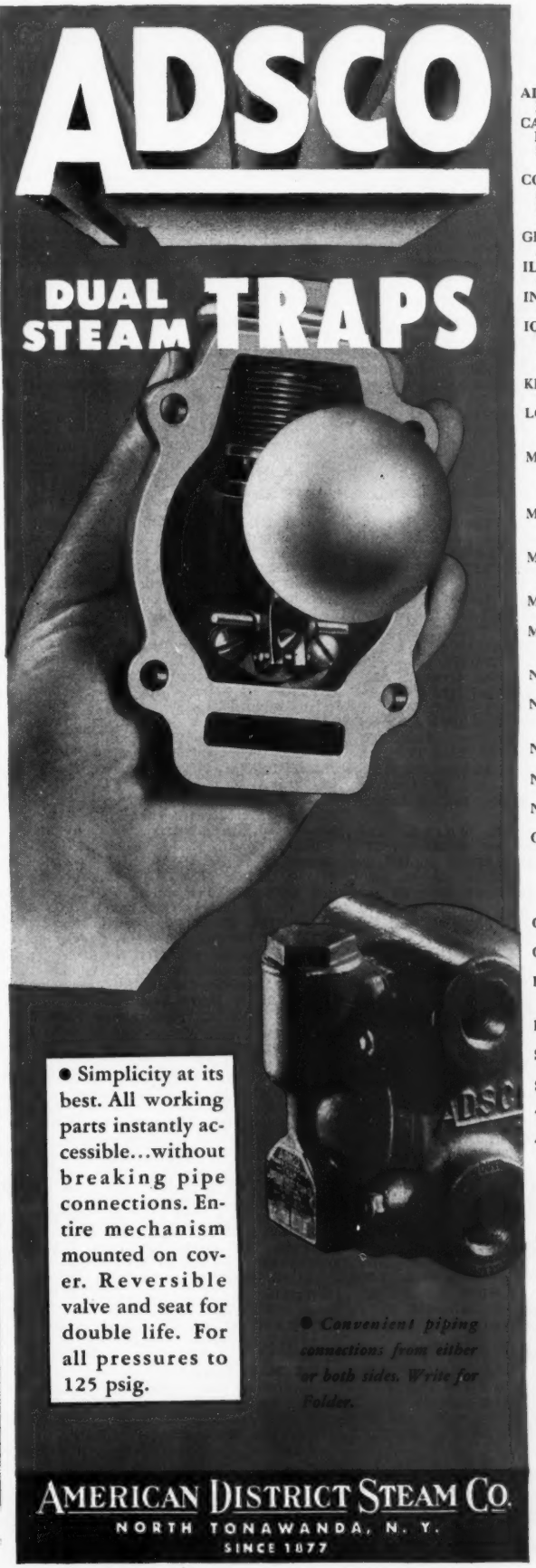
SOUTH JEANERETTE—St. Mary, June; Atlantic Refining Co. 3 Jos. A. Blanchard, 37-13s-9e, TD 6,698 ft., perforations 6,524-34 ft., IP 154 bbl., ⅛-in. choke, gas-oil ratio 440, tubing pressure 1,010 psi., casing pressure 1,150 psi., gravity 37°.

ST. MARTINVILLE—St. Martin, January; Continental Oil Co. 7-A Conoco fee, 57-11s-6e, TD 5,649 ft., perforations Miocene 4,000-12 ft., IP 95 bbl., 8/64-in. choke, gas-oil ratio 238, gravity 25.7°, no water, tubing pressure 450 psi.

SUNSHINE—Iberville, November; Sohio Petroleum Co. B-1 Harry B. Nelson, 14-9s-1e, 8 miles west-northwest of St. Gabriel field, and on east side of Mississippi River, TD 11,023 ft., top sand 11,310 ft., perforations 10,310-315 ft., IP 60 bbl., 16/64-in. choke, gravity 29.4°.

UNNAMED—Acadia, June; J. C. Hawkins et al 1 Dolussa Vidrine Young, 19-7s-2w, TD 9,157 ft., perforations 8,530-36 ft., Marginulina Texana, IP 92 bbl. condensate and 5,000,000 cu. ft. gas, ¼-in. choke, gas-condensate ratio 54,300, tubing pressure, 2,525 psi., gravity 60.4°.

UNNAMED—Calcasieu, May; Sohio Petroleum Co. C-1 Sweet Lake Land & Oil Co., 34-10s-6w, TD 12,010 ft., perforations 10,882-97½ ft., IP 1,000,000 cu. ft. dry gas,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⅛-in. choke, tubing pressure 2,950 psi., no water.

UNNAMED—Calcasieu, October; Gulf Refining Co. 1-E Krause & Managan Lumber Co., 17-9s-11w, TD 8,863 ft., in sidetracked hole, perforations 8,838-42 ft., IP 54 bbl. condensate, ⅛-in. choke, gravity 41.6°, ratio 15,750, shut-in pressure 3,100 psi.

UNNAMED—Calcasieu, September; Sohio Petroleum Co. 1-E Sweet Lake Land & Oil Co., 29-10s-6w, TD 10,774 ft., perforations 10,712-735 ft. and 10,712-735 ft., IP 16 bbl. condensate and 4,000,000 cu. ft. gas, ¼-in. choke, gravity 47.7°.

UNNAMED—Jefferson Davis, November; W. T. Burton 1 Anna Byam Keith, 3-8s-3w, 1 mile southwest of West Tepetate production, TD 9,646 ft., top sand 8,392 ft., perforations 8,392-8,406 ft., IP 257 bbl., 10/64-in. choke, gravity 35.5°.

UNNAMED—Jefferson, September; Humble Oil & Refg. Co. 1 State Lease 801, Block 10, Grande Isle area, State Lease 801, TD 8,951 ft. in sidetracked hole, perforations 8,640-65 ft., IP 840 bbl., ¼-in. choke, gravity 30.9°.

UNNAMED—Lafourche, August; Sun Oil Co. 1 Lyric Realty & Parking Co., 66-15s-15e, Chacahoula area, TD 11,131 ft., perforations 10,078-090 ft., IP 166 bbl., ⅛-in. choke, gravity 34.6°.

UNNAMED—Pointe Coupee, February; The Texas Co. 1 Lottie Land & Development Co., 25-6s-8e, TD 10,509 ft., perforations 8,848-62 ft., IP 62 bbl. condensate and 8,250,000 cu. ft. gas, ½-in. choke, tubing pressure 1,620 psi., gravity 53.2°, 2.7 per cent water.

UNNAMED—St. Mary, May; The Texas Co. 12 State-Cote Blanche Island Lease 340, West Cote Blanche Bay, Township 15s-7e, TD 13,824 ft., perforations 13,300-358 ft., IP 6 bbl. condensate and 7,700,000 cu. ft. of gas, 10/64-in. choke, tubing pressure 2,250 psi., shut-in pressure 4,800 psi., gravity 56.9°, no water.

UNNAMED—Terrebonne, August; Magnolia Petroleum Co. 1 Ship Shoal Block 72, Lease 766, 8 miles south of Coon Point in Ship Shoal area, Gulf of Mexico, TD 9,355 ft., perforations 7,266-76 ft., IP 1,992,000 cu. ft. gas, 12/64-in. choke, shut-in tubing pressure 2,950 psi.

VALENTINE—Lafourche, March; The Texas Co. 1 Luke Guidrez, 51-17s-20e, TD 12,780 ft., perforations 11,036-91 ft., IP 25 bbl. condensate and 4,852,000 cu. ft. gas, 3/16-in. choke, gas-condensate ratio 194,500, tubing pressure 3,850 psi., gravity 51.4°, no water.

WEEKS ISLAND—Iberia, February; Humble Oil & Refining Co. 2 R. H. Goodrich et al, Township 14s-6e, TD 8,139 ft., perforations 7,968-7,976 ft., IP 138 bbl., 5/32-in. choke, gravity 30.7°.

WEST BIVENS—Beauregard, December; The Atlantic Refining Co. 1 Kirby Lumber Co., 17-5s-13w, 4½ miles east of Texas-Louisiana state line and approximately 3½ miles west of Bivens production, TD 9,806 ft., top sand 9,328 ft., Wilcox perforations 9,328-34 ft., IP 195 bbl. 8/64-in. choke, gravity 39°.

WEST COTE BLANCHE BAY—St. Mary, April; The Texas Co. 30 State-West Cote Blanche Bay, Lease 340, Township 16s-7e, TD 10,008 ft., perforations 6,553-64 ft., IP 225 bbl., 9/64-in. choke, gas-oil ratio 397, tubing pressure 910 psi., gravity 31.7°, 0.1 per cent water.

WEST COTE BLANCHE BAY—St. Mary, July; The Texas Co. 37 State-West Cote Blanche Bay, Lease 340, Township 15s-6e, TD 3,153 ft., perforations 2,364-70 ft., IP 32 bbl., 11/64-in. choke, gas-oil ratio 750, tubing pressure 750 psi., gravity 20.7°, 46 per cent water.

WEST COTE BLANCHE BAY—St. Mary, June; The Texas Co. 36 State-West Cote Blanche Bay, Lease 340, in the bay, Township 15s-6e, TD 2,100 ft., perforations 1,924-34 ft., IP 129 bbl., 15/64-in. choke, gas-oil ratio 111, tubing pressure 100 psi., gravity 20.5°, no water.

OFFSHORE DEVELOPMENT

BLOCK 16, GRAND ISLE AREA—Jefferson, December; Humble Oil & Refg. Co. 1 State-Caminada Pass, Lease Acct. No. 4, Grand Isle area, Block 16, State Lease 799, Tract 1114, 7½ miles southwest of No. 1 Block 10, Grand Isle discovery, TD 8,259 ft., top sand 4,584 ft., perforations 4,584-96 ft., IP 219 bbl., 5/32-in. choke, gravity 38°.

BLOCK 45, EUGENE ISLAND AREA—Iberia, November; Magnolia Petroleum Co. 1 State Lease 838, Block 45, 12 miles southwest of Rabbit Island field, 12 miles south of nearest point on shore line, TD 13,636 ft., in sidetracked hole, top sand 11,351 ft., perforations 11,351-58 ft., IP 60 bbl., ⅜-in. choke, and 1,260,000 cu. ft. gas, gravity 45.4°.

NEW PAYS

BANCROFT—Beauregard, March; Roeser & Pendleton, Inc., et al 1 Lutcher-Moore Lumber Co., SE NW 14-6s-13w, TD 8,392 ft., perforations 7,744-46 ft., Eocene, IP 134 bbl., ⅛-in. choke, gas-oil ratio 1,014, tubing pressure 850 psi., gravity 43.9°, 0.1 per cent water.

BARATARIA, SOUTH—Jefferson, March; The California Co. 12 E. P. Brady, Lease 1, 2-16s-23e, TD 11,118 ft., perforations in Miocene, 9,688-9,708 ft., IP 136 bbl. condensate, 5/16-in. choke, gas-condensate ratio 41,713, tubing pressure 2,850 psi., gravity 52.1°, no water.

BAY DE CHENE—Lafourche, January; The Texas Co. 1-C Lafourche Basin Levee district, 20-19s-24e, TD 11,940 ft., perforations 10,768-796 ft., IP 146 bbl., 5/32-in. choke, gas-oil ratio 7,945, tubing pressure 2,650 psi., gravity 35.9°, 0.2 per cent water.

BAY DE CHENE—Lafourche, June; The Texas Co. 6 State-Bay De Chene, Lease 356, Bay De Chene, TD 8,940 ft., perforations at 3,696-3,702 ft., IP 32 bbl., 10/64-in. choke, gas-oil ratio 5,880, tubing pressure 280 psi., gravity 28.9°, no water.

BAY DE CHENE—Jefferson, April; The Texas Co. 5 State-Bay De Chene, Lease 356, Bay De Chene, Township 19s-24e, TD 9,556 ft., perforations 6,862-78 ft., IP 168 bbl., 9/64-in. choke, gas-oil ratio 1,006, tubing pressure 1,100 psi., gravity 33.3°, 0.1 per cent water.

BAYOU COUBA—St. Charles, June; Gulf Refining Co. 28 Delta Security Co., Inc., 18-15s-22e, TD 8,234 ft., perforations 3,799-3,803 ft., IP 168 bbl. 5/32-in. choke, gas-oil ratio 215, gravity 29.5°, no water.

BLOCK 32—Terrebonne, August; Kerr-McGee Oil Industries, Inc., 3 State-Block 32, Lease 754 (directional well from State 1 Block 32 platform), TD 3,398 ft., perforations 1,758-74 ft., IP 750 bbl., ½-in. choke, gravity 25.6°.

BLOCK 32—Terrebonne, July; Kerr-McGee Oil Industries, Inc., 2-32 State-Ship Shoal Area, TD 3,238 ft., perforations 2,808-24 ft., IP 700 bbl., 21/64-in. choke, gas-oil ratio 86, tubing pressure 200 psi., gravity 27.7°, 0.1 per cent water.

BULLY CAMP—Lafourche, May; Gulf Refining Co. 20 Delta Securities Co., 36-19s-21e, TD 10,136 ft., perforations 7,788-98 ft., IP 210 bbl., ⅛-in. choke, gas-oil ratio 1,220, tubing pressure 1,725 psi., gravity 35.9°, 0.2 per cent water.

DAVE HAAS—Avoyelles, July; Atlantic Refining Co. 11 Haas Investment Co., 10-2s-2e, Sparta sand, TD 7,797 ft., perforations 7,448-7,535 ft., 7,448-70 ft., 7,488-7,505 ft., and 7,520-35 ft., IP 118 bbl., 10/64-in. choke, gas-oil ratio 390, tubing pressure 425 psi., gravity 35.9°, no water.

DELTA FARMS—Lafourche, June; The California Co. 51 Louisiana Delta Farms, Unit 1, 6-17s-23e, TD 6,923 ft., perforations 6,908-14 ft., IP 135 bbl., ⅛-in. choke, gas-oil ratio 821, tubing pressure 1,150 psi., gravity 40.5°, no water.

DELTA FARMS—Lafourche, May; The California Co. 14 Louisiana Delta Farms, Lease 1, 6-17s-23e, TD 12,888 ft., perforations 11,811-8.9 ft., IP 240 bbl., 3/16-in. choke, gas-oil ratio 1,162, tubing pressure 900 psi., gravity 26.5°.

EDGERLY—Calcasieu, January; Sun Oil Co. 6 Hunter Co., 21-9s-11w, TD 4,226 ft., perforations 4,104-35 ft., IP 81 bbl., 9/64-in. choke, gas-oil ratio 279, tubing pressure 210 psi., gravity 25°, no water.

EGAN—Acadia, January; Sun Oil & Sohio Petroleum Co., 1 Kollitz unit, 7-10s-1w, TD 10,962 ft., perforations Lower Miocene 10,-931-934 ft., IP 70 bbl. fluid and 1,213,215 cu. ft. gas, ⅛-in. choke, gas-fluid ratio 17,332, tubing pressure 3,150 psi., gravity 36.8°, 7 per cent salt water.

FOUR ISLAND DOME—Terrebonne, December; The Superior Oil Co. 1-19 L.L.E. State Unit 19, 24-21s-16e, TD 13,230 ft., top sand 12,210 ft., perforations 12,210-220 ft., IP 294 bbl., 9/64-in. choke, gravity 38°.

GOOD HOPE—St. Charles Parish, September, The Pure Oil Co. 6 GATX, 7-12s-8e, TD 9,450 ft., perforations 7,750-72 ft., IP 298 bbl. 10/64-in. choke, gravity 45.7°.

GORDON, NORTH—Beauregard, September; Barnsdall Oil Co. 3 Edgewood, 13-6s-10w, TD 8,865 ft., Cockfield sand, perforations 8,826-36 ft., IP 105 bbl., 9/64-in. choke, gravity 49°.

HOLMWOOD—Calcasieu, January; Sohio Petroleum Co. 1 Farmers Land & Canal Co. Mallet Unit 1, 35-10s-7w, TD 12,001 ft., perforations 10,820-840 ft., IP 30 bbl. condensate and 3,000,000 cu. ft. gas, 10/64-in. choke, gas-oil ratio 100,000, tubing pressure 3,600 psi., gravity 52.5°, no water.

HORSESHOE BAYOU—St. Mary, April; The Texas Co. 6 State-St. Mary Parish Land Co., Unit 1, 40-17s-9e, TD 12,102 ft., perforations 11,994-12,004 ft., IP 443 bbl., 10/64-in. choke, gas-oil ratio 746, tubing pressure 1,950 psi., gravity 35.1°, 0.2 per cent water.

IOTA—Acadia, May; Sohio Petroleum Co. 1 D. A. Burnell, 14-8s-2w, TD 9,300 ft., perforations 8,666-98 ft., IP 292 bbl., 10/64-in. choke, gas-oil ratio 565, tubing pressure 1,100 psi., gravity 31.8°, no water.

LAKE MONGOULOIS—St. Martin, June; The Texas Co. 8 State-Lake Mongoulois State Lease 303, 4-10s-9e, TD 11,093 ft. in sidetracked hole, perforations 10,968-11,00 ft., IP 209 bbl., 10/64-in. choke, gas-oil ratio 592, tubing pressure 1,000 psi., gravity 25.8°, no water.

LEEVILLE—Lafourche, January; The Texas Co. 5 City of New Orleans, TD 13,48 ft., perforations in Miocene 12,980-985 ft., IP 146 bbl., ¼-in. choke, gas-oil ratio 11,721, tubing pressure 1,400 psi., gravity 47.9°, no water.

MOSS LAKE—Calcasieu, February; Sun Oil Co. 2 Louisiana Farm & Livestock Co. 7-11s-9w, TD 9,350 ft., perforations 8,613-21 ft., IP 39 bbl. condensate and 2,332,000 cu. ft. gas through 12/64-in. choke, gas-condensate ratio 60,488, open flow 11,000,000 cu. ft. gas, tubing pressure 2,880 psi., shut-in pressure 3,080 psi., gravity 55.1°, no water.

NAPOLEONVILLE—Assumption, June; Shell Oil Co., Inc., 2 Dugas & Leblanc, Ltd. 35-12s-13e, TD 10,587 ft., TD sidetracked hole 9,950 ft., perforations 9,845-56 ft., IP 268 bbl., 8/64-in. choke, gas-oil ratio 690, tubing pressure 1,690 psi., casing pressure 1,750 psi., gravity 35°, no water.

PECAN LAKE—Cameron, October; The Superior Oil Co. B-5 Miami Corp., 30-14s-3w, TD 11,804 ft., perforations 10,488-505 ft. IP 57 bbl. condensate and 3,470,000 cu. ft. gas, ¼-in. choke, ratio 61,135, gravity 47.6°.

PLUMB BOB—St. Martin, October; The Texas Co. 21 St. Martin Land Co., 17-8s-7e, TD 11,191 ft., perforations 9,964-78 ft., IP 390 bbl., 10/64-in. choke, gravity 33°.

POINT A LA HACHE—Plaquemines, July; Sid W. Richardson et al E-5 Delacroix Corp. 34-16s-14e, TD 11,016 ft., perforations 10,142-50 ft., IP 180 bbl. condensate, ¼-in. choke, gas-condensate ratio 23,760, tubing pressure 3,700 psi., casing pressure 800 psi., gravity 54°, no water.

ST. GABRIEL—Iberville, July; Gravis & Mitchell 1 Mary Walker Goston, 7-9s-2e, TD 11,625 ft., perforations 11,015-045 ft., IP 490 bbl. condensate, 7/64-in. choke, gas-condensate ratio 3,600, tubing pressure 4,200 psi., gravity 52°, no water.

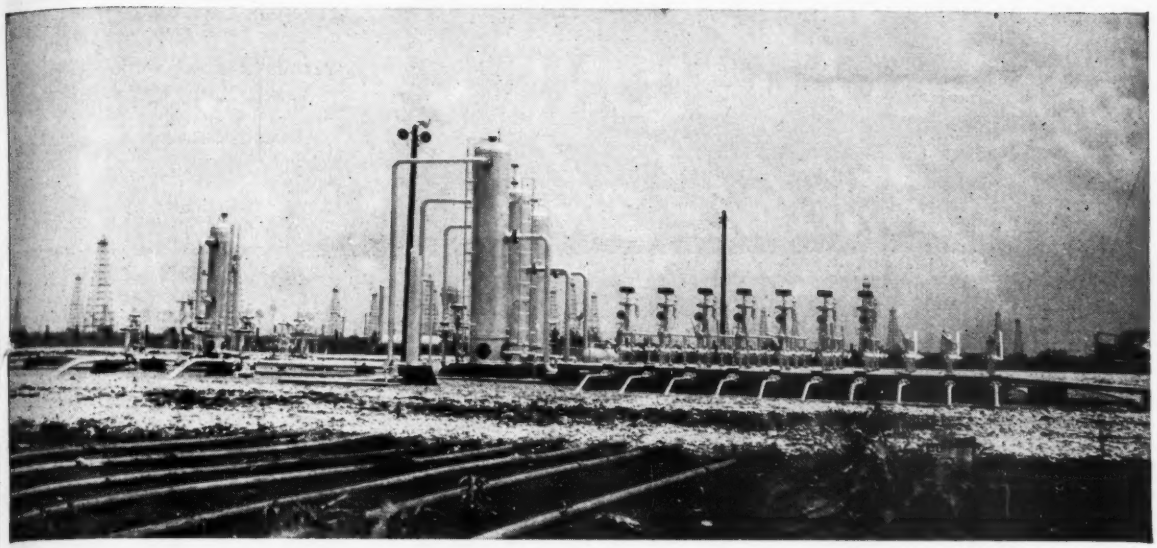
ST. MARTINVILLE—St. Martin, February; Continental Oil Co. 2 Barras-Isidore unit, 66-11s-6e, TD 5,109 ft., perforations 4,280-94 ft., IP 90 bbl., 8/64-in. choke, gas-oil ratio 300, tubing pressure 425 psi., casing pressure 575 psi., gravity 25.8°.

WEEK'S ISLAND—Iberia, November; Shell Oil Co., Inc., A-1 J. A. Smith, 18-14s-7e, TD 15,094 ft., top sand 14,243 ft., perforations 14,243-255 ft., IP 420 bbl., 12/64-in. choke, gravity 33°. Deepest oil production in Louisiana.

ARKANSAS

NEW POOLS

CAIRO—Union, July; Phillips Petroleum Co. 1 W. B. Scales, NE SW 3-18s-17w, Smackover, 7,769-78 ft., IP 432 bbl.



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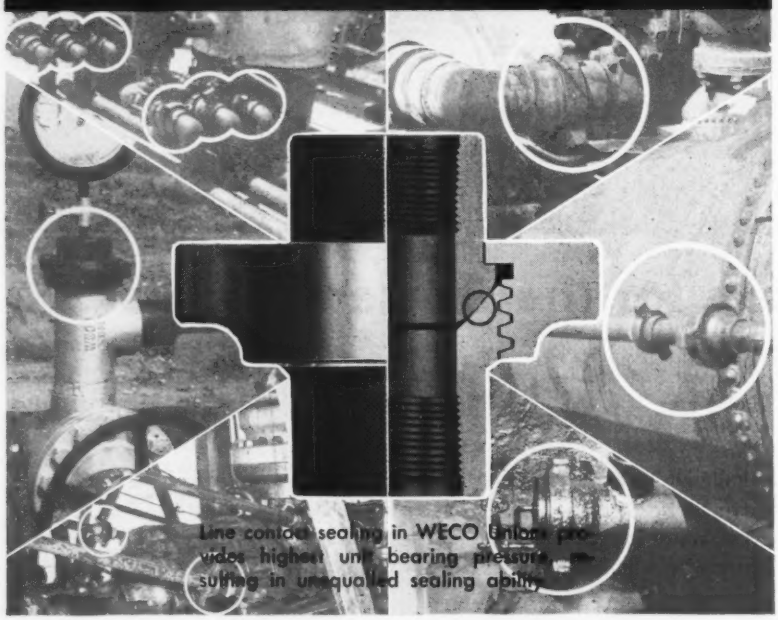

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COLLEGE HILL—Columbia, August; McAlester Fuel Co. A-1 W. B. Black, NW SE 24-15s-21w, Smackover, 6,532-35 ft., IP 60 bbl.

FELSENTHAL—Ashley, November; Superior Oil Co. of California 1 Bradley Lumber Co., NE NE 11-19s-10w, Cotton Valley, 5,874-80 ft., IP 53 bbl.

UNNAMED—Calhoun, January; Houston Oil Co. 1 H. B. Gaughan, SW SW NE 34-13s-16w, Meakin sand, 1,990-2,005 ft., IP 25 bbl.

UNNAMED — Union, February; G. H. Vaughn 1 Annie Smith, SE SE 8-16s-17w Smackover, 6,337-42 ft., IP 72 bbl.

MISSISSIPPI

NEW POOLS

EAST YELLOW CREEK—Wayne, August; Walter E. Sistrunk 1 Ralph Stanley, NE NW 8-9n-7w, 2½ miles northeast of Yellow Creek field, TD 5,507 ft., perforations 4,848-53 ft., and 4,925-38 ft., IP 180 bbl., 3 per cent b.s. and w., 19.6° gravity.

OVETT—Jones, January; Gulf Refining Co. 1 L. L. Majors, 29-6n-11w, TD 13,251 ft. IP 214 bbl. of 31.3°-gravity oil, perforations in Lower Cretaceous Comanche zone, 12,011-13,082 ft. This is deepest producing well in the State of Mississippi, and establishing the first Comanche oil production.

ROXIE AREA—Franklin, December; H. L. Hunt 1 W. L. Graves, 29-6n-2e, TD 10,990 ft., perforations 10,578-85 ft., IP 553 bbl. condensate plus 3,552,000 cu. ft. gas, ½-in. choke, gravity 50.1°.

SANDY HOOK—Marion, July; Humble Oil & Refining Co. 2 Ernest R. Ford, et al, 13-1n-18w, TD 10,192 ft., IP 4,420,000 cu. ft. gas per day, plus 53.5 bbl. 53°-gravity condensate and 10.5 bbl. salt water, perforations in lower Tuscaloosa sand 8,979-94 ft. and 8,997-9,002 ft. Well now shut in.

SOUTH LA GRANGE—Adams, September; Harry W. Elliott 1 Edwin B. Ogden, 42-6n-2w, TD 6,500 ft., IP 259 bbl., 11/64-in. choke, 44.2° gravity, perforations in Wilcox sand at 6,410-18 ft.

CALIFORNIA

NEW POOLS

ALMA—Kern, February; M. R. M. Syndicate 5 Claire, 22-28s-28e, IP 25 bbl. daily, perforated interval 2,690-2,705 ft., Vedder sand, TD 2,945 ft.

CIERVO—San Benito, July; The Texas Co. 1 Nicholas, 28-16s-12e, IP 18 bbl. daily, perforated interval 1,103-1,183 ft., Eocene, TD 1,252 ft.

COAL OIL POINT—Santa Barbara, August; Hololulu Oil Corp. 309-2 Signal-Macco-State, 19-4n-28w, IP 89 bbl. daily, perforated interval 10,020-47 ft., Vaqueros sand, TD 10,054 ft.

DOMINGUEZ SOUTHEAST—Los Angeles, March; Morton & Sons 1 Dominguez Estates Co., 3-4s-13w, IP 175 bbl. daily, perforated intervals 6,640-6,870 ft. in "5" Zone (Pliocene) and 7,790-8,014 ft. in "7" Zone (Miocene), TD 8,144 ft.

EAST GOSFORD—Kern, December; Hancock Oil Co. of California 85-23 Kern County Land Co., 20-30s-26e, IP 215 bbl. daily, perforated interval 7,839-54 ft., Stevens 8,473 ft.

GUIJARRAL HILLS—Fresno, September; Barnsdall Oil Co. 88-34-1 Fred Smith, 34-20s-16e, IP 827 bbl. daily, perforated interval 8,647-8,729 ft., Leda sand, TD 8,730 ft.

GUADALUPE—San Luis Obispo, June; Continental Oil Co. 2 LeRoy, 2-10n-36w, IP 35 bbl. daily, perforated interval 2,664-2,740 ft., Foxen sand (Pliocene), TD 2,759 ft.

PETALUMA—Conoma, April; Trico Oil & Gas Co. 2 Petaluma Community 5, 30-5n-6w, IP 32 bbl. daily, perforated interval 941-971 ft., Petaluma sand (Pliocene), TD 971 ft.

PLACERITA CANYON—Los Angeles, April; Nelson-Phillips Oil Co. 1 Kraft, 31-4n-15w, IP 60 bbl. daily, perforated interval 580-714 ft., Saugus sand, TD 2,242 ft.

RUSSELL RANCH—Santa Barbara, June; Richfield Oil Corp. 28-5 Russell, 5-10n-27w, IP 508 bbl. daily, perforated interval 2,973-3,357 ft., Vaqueros sand, TD 4,218 ft.

SAN EMIGDIO—Kern, March; Apex Petroleum Corp., Ltd., 3 Los Lobos 5-10n-22w,

IP 28 bbl. daily, perforated interval 1,419-1,481 ft., Vaqueros sand, TD 1,482 ft.

SECTION "20"—Kern, August; Ring Oil Co. 1 Ring, 20-27s-28e, IP 40 bbl. daily, perforated interval 2,315-36 ft., Vedder sand, TD 2,337 ft.

TEJON HILLS—Kern, July; Tejon Hills Oil Co. 2 Tejon Hills, 10-11n-18w, IP 175 bbl. daily, perforated interval 380-408 ft., Santa Margarita sand, TD 408 ft.

WALNUT—Los Angeles, May; Hugh A. Bardeen 1 Lautenbach, 10-2s-10w, completion data unknown.

WHITEROCK—San Luis Obispo, January; Norris Oil Co. 2 Cuyama Ranch, 25-11n-28w, IP 300 bbl. daily, perforated interval 1,878-1,918 ft., Temblor sand, TD 1,976 ft.

NEW PAYS

CAT CANYON—Santa Barbara, October; General Petroleum Corp. 86 Los Flores, 21-7n-33w, IP 108 bbl. daily, perforated interval 4,681-5,027 ft., "86-21" Zone (Miocene), TD 5,037 ft.

COLES LEVEE NORTH—Kern, February; Richfield Oil Corp. 68-29 C.L.A., 29-30s-25e, IP 441 bbl. daily, perforated interval 9,648-9,680 ft., "68-29" Zone (Lower Stevens), TD 9,882 ft.

DEL VALLE WEST—Los Angeles, April; Ohio Oil Co. 14 Vasquez, 17-4n-17w, IP 88 bbl. daily, perforated intervals 6,260-6,400 ft. in Vanquez "14" Zone and 6,600-6,900 ft. in Del Valle sand, TD 8,300 ft.

MIDWEST-SUNSET—Kern, April; Standard Oil Co. of California 54 Well, 9-11n-23w, IP 136 bbl. daily, perforated interval 4,986-5,148 ft., Pentland sand, TD 5,300 ft.

NEWHALL - POTRERO—Los Angeles, April; Barnsdall Oil Co. 65-7 Ranchot San Francisco, 26-4n-17w, IP 431 bbl. daily, perforated interval 11,150-11,305 ft., "7" Zone, TD 12,717 ft.

SAN ARDO—Monterey, August; The Texas Co. 2 Biaggi, 12-22s-9e, IP 20 bbl. daily, perforated interval 1,139-58 ft., Biaggi sand (Santa Margarita), TD 1,159 ft.

SAN ARDO—Monterey, June; Jergins Oil Co. 15 Orradre, 12-23n-10e, IP 150 bbl. daily, perforated interval 2,082-2,156 ft., Campbell sand (Santa Margarita), TD 2,157 ft.

WHEELER RIDGE—Kern, May; Richfield Oil Corp. 72-29 Kern County Land Co., 29-11n-20w, IP 126 bbl. daily, perforated interval not released, pay zone Coal Oil Canyon sand, TD 1,176 ft.

WHITEROCK—San Luis Obispo, June; Richfield Oil Corp. 37 Anderson-Colgrove, 30-11n-27w, IP 4,080 bbl. daily, perforated interval 2,791-3,019 ft., Vaqueros sand, TD 3,019 ft.

ROCKY MOUNTAIN AREA

MONTANA

NEW POOLS

BIG WALL—Musselshell, July; The Texas Co. 1-B Northern Pacific Railroad, SE NE NW 19-10n-27e, IP 20 bbl., Kibbey, 3,098-3,105 ft., TD 3,139 ft.

MELSTONE—Musselshell, October; Amerada Petroleum Corp. and General Petroleum Corp. 1 Hougen, C SE SE 23-10n-29e, IP 635 bbl., Kibbey, 4,185-4,229 ft., TD 4,229 ft.

RAGGED POINT—Musselshell, January; The Texas Co. 1 Manion, SE SW SE 5-11n-30e, IP 238 bbl., Kibbey, 4,380-4,457 ft., TD 4,512 ft.

WOMANS POCKET—Golden Valley, December; R. M. Amick 3 Northern Pacific Railroad, SE SW NE 29-8n-21e, IP estimated 40 bbl., Amsden, 2,020-2,119 ft., TD 2,119 ft.

NEW PAYS

BIG WALL—Musselshell, December; The Texas Co. 1 Zoerb, SE NW SE 18-10n-27e, IP 75 bbl., 12/64-in. choke, lower Amsden, 3,818-20 ft., TD 3,617 ft.

NORTHWEST ELK BASIN—Carbon, May; Sinclair Wyoming Oil Co. 2 H. G. Wilkins, SW NW NW 28-9s-23e, IP 504 bbl., 24/64-in. choke, Lakota, 4,598-4,634 ft., TD 4,676 ft.

WYOMING

NEW POOLS

ADON—Campbell, March; The Texas Co. 1 Unit, C NW NW 2-52n-72w, IP 244 bbl., Minnelusa, 8,997-9,007 ft., TD 9,945 ft.

BRIDGE CREEK—Niobrara, September; Pacific Western Oil Co. and National Associated Petroleum Co. 1 Grimes Government, NW NW SE 31-39n-61w, IP 198 bbl., Dakota, 2,538-74 ft., TD 2,595 ft.

FIDDLER CREEK—Weston, October; Clark Drilling Co. et al 1 Witzel, NW NE SW 19-46n-64w, IP 238 bbl., ½-in. choke, Newcastle, 4,502-52 ft., TD 4,552 ft.

FRANKS FORK—Park, May; Taylor Oil Co. 1 Thelft, C SW SW 23-48n-103w, IP 35 bbl., Phosphoria, 4,138-44 ft., TD 4,370 ft.

HEART MOUNTAIN—Park, October; Trigood Oil Co. 1 Taggert, NW SW SW 8-54n-102w, IP 6,800,000 cu. ft. of gas, Frontier, 1,669-2,160 ft., TD 4,017 ft.

KUEMMERLE AREA—Weston, December; Sierra Petroleum Co. 1 Kuemmerle, NE NE SE 14-45n-65w, IP 50 bbl., Dakota, 5,325-5,447 ft., TD 5,447 ft.

LITTLE LARAMIE—Albany, June; Superior Oil Co. and The California Co. 1 Parkinson, SE SE NE 5-16n-76w, IP 200 bbl., Tensleep, 3,741-56 ft., TD 3,824 ft.

NORTH DANKER—Park, December; Continental Oil Co. 1 Government, NE NE NE 8-57n-98w, IP 2,946,000 cu. ft. of gas, Frontier, 2,810-40 ft., TD 6,306 ft.

SAGE CREEK—Big Horn, July; Sohio Petroleum Co. and Barnsdall Oil Co. 1 D. Fox, C SE SW 6-57n-97w, IP 300 bbl., ⅛-in. choke, Madison, 3,135-3,450 ft., TD 3,450 ft.

SILVER TIP—Park, May; Seaboard Oil Co. 53-33 Northern Pacific Railroad, NW SW NE 33-58n-100w, IP 576 bbl., Phosphoria, 8,496-8,558 ft., TD 9,507 ft.

SKULL CREEK—Weston, June; Brinkerhoff Drilling Co. 1 Mandell, NW SW SW 3-44n-62w, IP 288 bbl., ¼-in. choke, Newcastle, 3,047-67 ft., TD 3,067 ft.

SOUTH COLE CREEK—Converse, October; Phillips Petroleum Co. 1 Cole, SE SW NW 17-34n-76w, IP 149 bbl., 12/64-in. choke, Lakota, 8,289-8,324 ft., TD 8,380 ft.

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TAYLOR SUSSEX—Johnson, July; Continental Oil Co. 1 Coles, NW NW SE 17-42n-78w, IP 241 bbl., ¼-in. choke, Lakota, 7,697-7,726 ft., TD 7,726 ft.

WEST POISON SPIDER — Natrona, August; Pure Oil Co. 1 Unit, C NW SE 11-33n-84w, IP 899 bbl., ¾-in. choke, second Frontier, 14,191-14,309 ft., TD 14,309 ft.

WILDHORSE BUTTE—Hot Springs, October; Cockburn et al 1 Hole, C SE SW 2-42n-93w, IP 50 bbl., Phosphoria, 1,120-80 ft., TD 1,202 ft.

NEW PAYS

BEAVER CREEK — Fremont, December; Stanolind Oil & Gas Co. 11 Unit, CN½ SE 10-33n-96w, IP 200 bbl., upper Tensleep. (Well still drilling in upper Tensleep).

EAST ALLEN LAKE—Carbon, October; Wasatch Oil Co. 1 Hintze-Government, C NE SE 18-22n-78w, IP 36 bbl., Tensleep, 3,915-64 ft., TD 3,964 ft.

FOURBEAR—Park, November, Honolulu Oil Corp. 3 L. L. Anderson, SW NW SE 20-48n-103w, IP 259 bbl., Madison, 3,470-3,702 ft., TD 3,941 ft.

HAMILTON DOME — Hot Springs, December; Argo Oil Corp. 41 Placer, SE NE SE 14-44n-98w, IP 500 bbl., Madison, 3,332-3,506 ft., TD 3,506 ft.

HATFIELD—Carbon, December; Ohio Oil Co. 4 Union Pacific Railroad, C SE SE 35-20n-88w, IP 100 bbl., Sundance, 4,350-4,400 ft., TD 4,400 ft.

LITTLE BUCK CREEK—Niobrara, July; Continental Oil Co. 12-B E.L.C.U., NW NE SE 26-36n-64w, IP 275 bbl., Converse, 5,216-54 ft., TD 6,004 ft.

LITTLE SAND DRAW—Hot Springs, December; Seaboard Oil Co. and Husky Refining Co. 1 Government, NW NE SW 2-44n-96w, oil from Embar and Tensleep formations on drill-stem tests. (Still drilling in Tensleep below 6,056 ft.).

LOST SOLDIER—Sweetwater, July; Sinclair-Wyoming Oil Co. 2 Drayton Consolidated, SE NE SE 3-26n-90w, IP 720 bbl., Cambrian, 5,475-6,288 ft., TD 6,288 ft.

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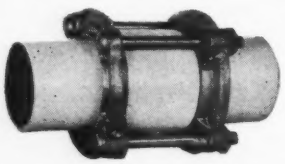
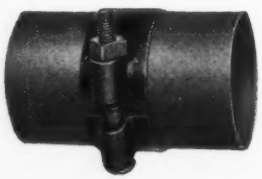
The four styles shown here are just part of Dresser's complete line of repair products. See them at your oilfield supply store or write for our Oilfield Catalog. Overnight delivery throughout the southwest from our Houston warehouse. Keep Dressers in stock and have the jump on emergencies.



COLLAR CLAMP

Styles 4 and 41, for repairing and preventing leaks through threads of screw collars.

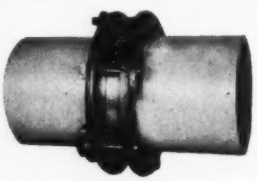


BAND CLAMP

Style 77B, for repairing small leaks and holes in the run of pipe.

SPLIT REPAIR CLAMP

Style 79B, for repairing pitholes and longitudinal splits in pipe.



POROUS-WELD CLAMP

Style 55, for repairing circumferential weld leaks.

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LOST SOLDIER—Sweetwater, May; Sinclair-Wyoming Oil Co. 77-A Unit, SE NE NE 10-26n-90w, IP 1,045 bbl., Madison, 4,728-5,031 ft., TD 5,031 ft.

MEDICINE BOW—Carbon, June; Ohio Co. 6-A William Kyle, NE SE NE 26-21n-79w, IP 840 bbl., ⅜-in. choke, Tensleep, 6,666-6,860 ft., TD 6,916 ft.

PITCHFORK—Park, April; Husky Refining Co. 5 Unit, NW NW SE 11-48n-102, IP 200 bbl., Madison, 4,219-4,355 ft., TD 4,470 ft.

SILVER TIP—Park, May; Seaboard Oil Co. 64-33 Northern Pacific Railroad, SE SW NE 33-58n-100w, IP 114 bbl., 16/64-in. choke, Frontier, 5,925-92 ft., TD 5,992 ft.

SOUTH STEAMBOAT — Fremont, May; Brinkerhoff Drilling Co. 3 Tribal, NW SE NW 9-3n-1w (WRM), IP 441 bbl., Phosphoria, 6,745-92 ft., TD 6,792 ft.

TORCHLIGHT—Big Horn, April; Stanolind Oil & Gas Co. 2 Orchard unit, SW NE SE 24-51n-93w, IP 300 bbl., Madison, 3,325-3,635 ft., TD 3,860 ft.

WERTZ—Carbon and Sweetwater, March; Sinclair-Wyoming Oil Co. 2-D Wertz, SE SW NE 1-26n-90w, IP 1,145 bbl., Madison, 6,751-7,193 ft., TD 7,193 ft.

WERTZ—Carbon and Sweetwater, November; Sinclair Wyoming Oil Co. 26-D Wertz, NW SE SE 1-26n-90w, IP 277 bbl., Cambrian, 7,515-7,627 ft., TD 7,627 ft.

WEST POISON SPIDER — Natrona, December; Pure Oil Co. 2 Unit, C NW NW 11-33n-84w, IP 1,617 bbl., Mesa Verde, 7,285-9,288 ft., TD 9,288 ft.

COLORADO

NEW POOLS

DOVE CREEK — Montezuma, December; Western Natural Gas Co. and Byrd-Frost, Inc., et al 1 Driscoll, CN½ NE NW 3-38n-19w (NMPM), IP 480 bbl. distillate plus 5,000,000 cu. ft. of gas, ¼-in. choke, Paradox, 5,910-34 ft., TD 5,934 ft.

McELMO — Montezuma, July; Western Natural Gas Co. and Byrd-Frost, Inc., et al, 1 Schmidt, C SW NW 24-36n-18w (NMPM), IP estimated 30,000,000 cu. ft. of carbon dioxide gas, Mississippian, 6,915-35 ft., TD 7,099 ft.

PAGODA—Routt, December; General Petroleum Corp. 55-34-G, NW NW SE 34-4n-89w, IP 7,700,000 cu. ft. gas, Shinarump, 3,957-4,037 ft., TD 4,900 ft.

SEELEY DOME—Rio Blanco, December; G. L. Reasor 1 Burgess, NE NE NW 26-3n-90w, IP 10 bbl., Mancos shale, 2,950-3,445 ft., TD 3,445 ft.

NEW PAYS

MAULDIN GULCH—Moffat, September; The Texas Co. and Frontier Refining Co. 2 Unit, SE NE SE 27-4n-95w, IP 153 bbl., Sundance, 6,391-6,409 ft., TD 6,409 ft.

McELMO — Montezuma, July; Western Natural Gas Co. and Byrd-Frost, Inc., et al 1 MacIntosh, C NW NW 25-36n-18w (NMPM), IP 500,000 cu. ft. gas, Shinarump, 1,515-40 ft., TD 1,540 ft.

UTAH

NEW POOLS

ASHLEY VALLEY—Uinta, October; Equity Oil Co. et al 1 Meagher, NE NW SW 23-5s-22e, IP 200 bbl., ⅜-in. choke, Weber, 4,136-52 ft., TD 4,152 ft.

BAR-X—Grand, August; Frontier Refining Co. 1 Crittenden, C SE SE 12-17s-25e, IP 3,750,000 cu. ft. carbon dioxide gas, Entrada, 3,555-3,610 ft., TD 4,493 ft.

BOUNDARY BUTTE—San Juan, July; Western Natural Gas Co. and Byrd-Frost, Inc., et al 1 English, C NE NW 22-43s-22e, IP 28,000,000 cu. ft. gas, Hermosa, 5,610-60 ft., TD 6,090 ft.

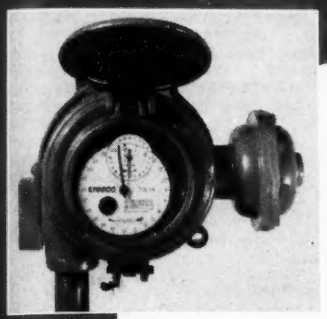
GORDON CREEK—Carbon, May; Pacific Western Oil Corp. 1 Unit, C SE NE 24-14s-7e, IP 8,500,000 cu. ft. carbon dioxide gas, ⅜-in. choke, Shinarump, 10,877-10,980 ft., TD 12,146 ft.

UPPER VALLEY—Garfield, December; The California Co. 1 Unit, C SW NW 12-36s-1e, IP 195 bbl., Pennsylvanian lime, 8,777-91 ft., TD 8,857 ft. (Still testing.)

NEW PAYS

BOUNDARY BUTTE—San Juan, November; Western Natural Gas Co. and Byrd-Frost, Inc., et al 2 English, SE SE NW 22-

Automatic ENGINE CONTROL



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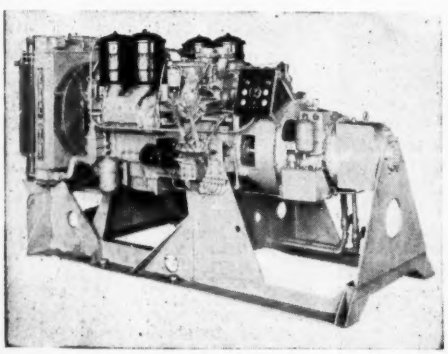

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43s-22e, IP 110 bbl., Coconino, 1,490-1,514 ft., TD 1,514 ft.

OKLAHOMA

NEW POOLS

ALABAMA, SOUTHWEST—Hughes, September; Murta 1 Ellis SE NW SE 6-9n-11e, Union Valley, 3,098-3,111 ft., IP 100 bbl., gravity 40.9°, TD 4,017 ft.

ASHER, SOUTHEAST—Pottawatomie, April; Brown 1 Hibbard, SE SW SW 21-6n-4e, Wanette, 3,080-90 ft., IP 5 bbl., TD 3,746 ft.

AVOCA, SOUTHWEST—Pottawatomie, June; Buell 1 Bankston, E/2 SE NW 12-6n-3e, Viola, 4,259-95 ft., IP 319 bbl., gravity 38.7°, TD 4,295 ft.

BANNER, WEST—Kay, April; Deardorf Oil Corp. et al 1 Merhoff, SE NE SE 12-27n-1e, Burbank, 3,562-3,622 ft., IP 27 bbl., gravity 37°, TD 4,225 ft.

BEBEE, EAST—Pontotoc, March; Sohio 1 Wilfong "A," NW NE SE 34-5n-5e, Viola lime, 2,860-2,940 ft., IP 98 bbl., TD 2,944 ft.

BRADLEY, NORTHEAST—Grady, December; Gulf Oil Corp. 1 Mainka, NW NW NE 12-5n-5w, third Bromide sand, 13,137-250 ft., IP 464 bbl., gravity 46.5°, TD 13,250 ft.

BRADLEY, SOUTHWEST—Now abandoned—Grady, April; Stanolind Oil & Gas Co. 1 Briscoe Unit, C NW SE 4-4n-5w, pay zone included Bromide, Oil Creek, McLish and Arbuckle, with most production from the Bromide, 13,687-15,184 ft., IP 126 bbl., TD 15,184 ft.

BRAY, SOUTHEAST—Stephens, August; Palmer 1 Leard-Amerada, SE NE NW 31-2n-5w, Springer sand, 10,039-78 ft., IP 25 bbl., gravity 35°, TD 10,144 ft.

BYARS, EAST—McClain, March; J. J. Lynn 1 Bonner, NW NE NW 30-5n-3e, Viola lime, 4,170-4,204 ft., IP 54 bbl., TD 4,204 ft., (first named Byars Townsite).

CEMENT, EAST—Grady, February; Halliburton, Inc., 2 Goodwin "C," C SE NW 8-5n-8w, Fortuna sand, 2,052-74 ft., IP 100 bbl., gravity 35.8°, TD 2,087 ft.

CEMENT, NORTH—Caddo, February; Magnolia Petroleum Co. 1-A Miller, SE NW NE 14-6n-9w, Marchand sand, 10,630-55 ft., IP 195 bbl., gravity 44°, TD 13,046 ft.

CERES, SOUTHWEST—Noble, June; Blair 1 Rolling, NE NE NW 9-22n-1w, Bartlesville, 4,558-4,603 ft., IP 528 bbl., gravity 41°, TD 4,603 ft.

COTTINGHAM, SOUTH—Payne, August; Deardorf 1 Howell, SW NE SE 14-17n-3e, Red Fork, 3,900-26 ft., IP 4,650,000 cu. ft. of gas, TD 3,978 ft.

DAVENPORT, SOUTHEAST—Lincoln, October; Deep Rock 1 Dye, SW SW SE 13-14n-5e, Prue, 3,314-99 ft., IP 26 bbl., TD 3,825 ft.

DENVER, SOUTHEAST—Cleveland, August; Halliburton 1 Comfort Ranch, SW SW NW 4-8n-1e, Earlsboro topped at 5,780 ft., IP 105 bbl., TD 5,843 ft.

DOVER, SOUTHWEST—Kingfisher, December; Superior Oil Co. 1 Long, SE SE SE 16-17n-7w, dolomite, 8,565-8,640 ft., IP 43 bbl., 63°, distillate, TD 9,026 ft.

ELK CITY—Beckham, February; Shell Oil Co. 1 Walters, C NE SW 14-10n-21w, Pennsylvanian sand (granite wash), 9,260-9,380 ft., IP 412 bbl., TD 13,133 ft.

ERIN SPRINGS, SOUTHEAST—Garvin, February; Cities Service Oil Co. 2 Rogers "B," NE NW SE 25-4n-4w, Pennsylvanian sand, 8,012-49 ft., IP 12 bbl., TD 8,480 ft.

EVANSVILLE, EAST—Logan, May; Jordan 1 Faver, SE SE SE 8-15n-1e, Bartlesville, 5,008-18 ft., IP 102 bbl., gravity 43°, TD 5,018 ft.

FOSTER, NORTH—Garvin, November; Carter Oil Co. 1 Pickett-Huffman, NE NE NE 23-2n-3w, fourth Deese sand, 7,775-7,814 ft., IP 166 bbl., gravity 44°, TD 7,940 ft.

FT. SILL, NORTHWEST—Comanche, July; Fisher 1-C Fulbright, SW SW NW 9-3n-11w, sand, 350-58 ft., IP 2 bbl., TD 376 ft.

GARDEN GROVE, NORTH—Okfuskee, June; Crosbie 1 Crain, SW SW NE 19-12n-7e, Hunton, 4,308-31 ft., IP 284 bbl., gravity 42°, TD 4,331 ft.

GERTY, NORTH—Hughes, June; Grabon 1 Hundley, SW NW NW 29-5n-10e, sand, 1,756-65 ft., IP 4,000,000 cu. ft. of gas, TD 1,765 ft.

HAYDENVILLE, SOUTH—Okfuskee, August; Mid-Continent 1 Holderby, SE NE SW 29-13n-10e, Cromwell, 2,910-26 ft., IP 130 bbl., gravity 31°, TD 2,926 ft.

HIRD, SOUTHEAST—Pontotoc, February; Delaney 1 Huddleston, SW NE SE 25-4n-6e, Senora sand, 1,134-48 ft., IP 14 bbl., gravity 30°, TD 1,740 ft. (later included in East Ada district).

HOOVER, NORTH—Garvin, August; Carlock 1 Tully, NE NE SE 12-1n-1w, second Deese sand, 4,599-4,609 ft., IP 305 bbl., gravity 47°, TD 4,628 ft.

INGALLS, SOUTHWEST—Payne, November; Sun Oil Co. 1 Linsenmeyer, NE NE NW 5-18n-4e, Peru, 3,368-74 ft., IP 20 bbl., TD 4,283 ft.

JENNINGS, SOUTHWEST—Creek, April; Deardorf 1 Conners, SE NE NW 9-19n-7e, Skinner, 2,615-58 ft., IP 30 bbl., TD 2,664 ft.

JOHNSONVILLE—McClain, November; Steelman 1 Smith, NW SW SE 24-5n-2e, Viola, 4,044-70 ft., IP 20 bbl., gravity 16°, TD 4,070 ft.

KATIE, SOUTHEAST—Garvin, November; Carter Oil Co. 1 Yeary-Vaughn, C SE NW 9-1n-1w, Hoxbar, 4,729-4,810 ft., IP 36 bbl., 61°-distillate, and 5,660,000 cu. ft. of gas, TD 7,650 ft.

KEOKUK, WEST—Seminole, December; Blair 1 Madgett, NW SW NE 4-10n-6e, Misener, 4,265-75 ft., IP 60 bbl., TD 4,275 ft.

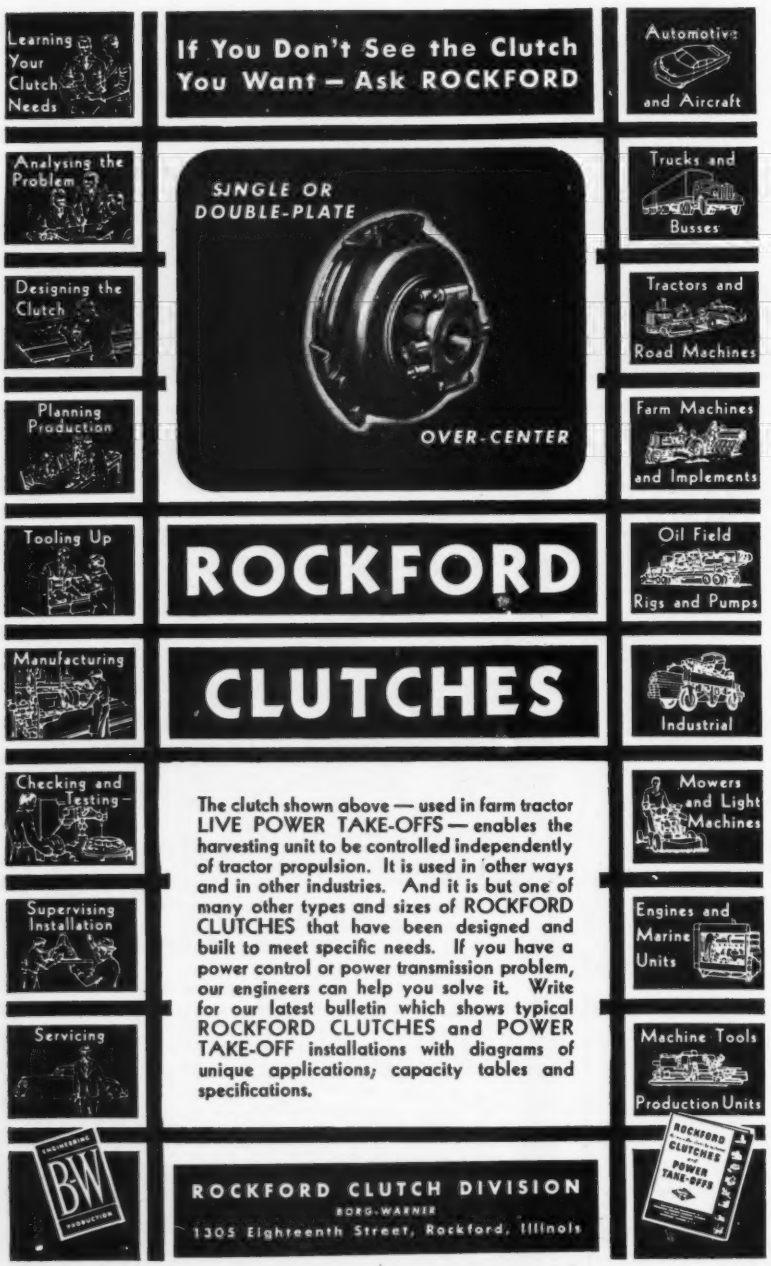
KNOX, NORTHWEST (REVIVED)—Grady, January; The Texas Co. 1 Hutson, SW SE SW 31-4n-5w, 4,138-59 ft., IP 31 bbl., TD 6,224 ft. (later included in Knox).

MARAMEC, EAST—Pawnee, November; Mid-Continent Petroleum Corp. et al 1 Robinson, SE SE NW 1-20n-6e, Tucker, 3,003-24 ft., IP 25 bbl., TD 3,025 ft.

MAYSVILLE, SOUTHEAST—Garvin, November; Magnolia Petroleum Co. 1 Mason Burns, NW SE NW 34-3n-2w, first Bromide sand, 6,249-58 ft., IP 419 bbl., gravity 40°, TD 6,280 ft.

MEEKER, SOUTHWEST—Lincoln, July; Smith 1 Jones, NW NW SE 35-12n-3e, unconformity sand, 4,930-37 ft., IP 24 bbl., TD 5,014 ft.

MEHAN, SOUTH—Payne, July; Republic Natural Gas Co. 1 Lovell Brothers Trust,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SW SW NW 35-18n-3e, Bartlesville, 3,939-45 ft., IP 10 bbl., TD 3,950 ft.

MICAWBER, SOUTHWEST — Okfuskee, June; Skelly Oil Co. 1 Bombarger, SW NE SE 12-13n-7e, lower Dutcher sand, 3,486-3,509 ft., IP 1,608,000 cu. ft. of gas, TD 4,100 ft.

MIDLOTHIAN, NORTHWEST — Lincoln, August; Toklan 1 Yancey, SE SE NW 26-14n-3e, Prue, 4,110-12 ft., IP 4,150,000 cu. ft. of gas, TD 4,124 ft.

MORSE, NORTHEAST—Okfuskee, October; Mid-Continent Petroleum Corp. 1 Harmon, NW SE SE 33-13n-10e, Gilcrease, 2,960-72 ft., IP 121 bbl., gravity 38°, TD 2,972 ft.

MUNGER, SOUTHEAST — Oklahoma, March; British-American Oil Producing Co. and Harper-Turner Oil Co. 1 Kramer, C SW NW 13-12n-2w, Hunton lime, 6,210-45 ft., IP 11 bbl. of distillate with 12,000,000 cu. ft. of gas, TD 6,271 ft.

NASH, EAST—Grant, March; C. S. Phillips, Jr., 1 Hall, NE NE SE 9-25n-7w, Oswego lime, 5,114-90 ft., IP 6 bbl., 60°-distillate, TD 5,525 ft.

NAVINA, NORTHEAST—Logan, July; Feagin 1 Noble, SE SE SW 20-16n-3w, Red Fork, 5,760-72 ft., IP 153 bbl., gravity 43.6°, TD 6,301 ft.

NEWCASTLE, EAST — McClain, June; Magnolia Petroleum Co. 1 Arnold, C SW SE 13-9n-4w, Chimney Hill-Hunton, 8,866-8,901 ft., IP 294 bbl., gravity 39°, TD 9,433 ft.

NEWCASTLE, SOUTHEAST — Cleveland, January; Mid-Continent Petroleum Corp. 1 Berry Estate, NW SW NW 32-9n-3w, Hunton, 8,784-8,830 ft., IP 422 bbl., TD 9,850 ft.

PANTHER CREEK, SOUTHWEST—Garvin, September; Carter Oil Co. and Stanolind Oil & Gas Co. 1 Rose-Vose, C NW NE 3-2n-3w, fourth Deese sand, 8,050-8,110 ft., IP 148 bbl., gravity 40°, TD 8,645 ft.

RAMSEY, SOUTHEAST—Payne, November; Callery & Hurt 1 Blumer, SE NW SE 28-18n-2e, Skinner, 4,331-41 ft., IP 2 bbl., TD 4,372 ft.

REDLAND, NORTHEAST—Sequoyah, February; Arkansas-Oklahoma Gas Co. 1 Brandt, NW NW NE 24-10n-25e, Atoka sand, 5,965-73 ft., IP 1,500,000 cu. ft. of gas, TD 5,973 ft.

RINGLING, NORTH—Jefferson, December; Amerada Petroleum Corp. 1 Edwards, NW SE SE 4-4s-4w, sand, 2,724-79 ft., IP 213 bbl., gravity 34°, TD 3,152 ft.

RIPLEY, SOUTHEAST—Payne, September; Jergins 1 Boyd, SE SE NW 28-18n-4e, Skinner, 3,475-86 ft., IP 2,000,000 cu. ft. of gas, TD 3,687 ft.

SANDY CREEK—Murray, June; Sohio Petroleum Co. 1 Kirby, NW NW NW 19-1n-3e, basal Oil Creek, 1,920-35 ft., IP 8 bbl., gravity 17.8°, TD 2,223 ft.

SCIPIO, NORTHWEST—Pittsburg, April; Grimes 1 Kleinke, NE SW SW 15-7n-12e, second Cromwell, 4,245-70 ft., IP 17,000,000 cu. ft. of gas, TD 4,270 ft.

SHORT JUNCTION, WEST — Cleveland, September; Continental Oil Co. 1 Maruska, SE SE SW 16-10n-4w, Bois d'Arc and Chimney Hill, 8,145-8,250 ft. and 8,492-8,532 ft., IP 86 bbl., gravity 37.6°, TD 9,098 ft.

SPORN, NORTHEAST—Payne, January; Deardorf 1 Anderson, SW SW NE 15-17n-3e, Red Fork, 3,982-87 ft., IP 75 bbl., TD 4,614 ft.

STEEDMAN, SOUTHWEST—Pontotoc, January; Foran et al 1 G. Johnson, SE NW SE 30-4n-8e, 488-506 ft., IP 100,000 cu. ft. of gas, TD 842 ft.

TYROLA, SOUTH—Pontotoc, May; Jaques 1 Myers, SE SW SE 9-5n-6e, Senora sand, 1,750-53 ft., IP 6,000,000 cu. ft. of gas, TD 1,758 ft.

UNNAMED—Beckham, December; Union Oil Co. 1 Music, N/2 SE NW 25-10n-21w, 9,649-62 ft., IP 237 bbl., 63°-gravity distillate, TD 9,708 ft.

UNNAMED—Caddo, December; Denver 1 School Land A, C SE SW 16-10n-9w, lower Dornick Hills, 12,600-60 ft., IP 5,000,000 cu. ft. of gas, TD 17,094 ft.

UNNAMED—Garvin, August; Anderson 1 Freeman, NW NE SE 26-3n-2w, second Deese sand, 5,473-5,503 ft., IP 30 bbl., gravity 43°, TD 5,645 ft.

UNNAMED—Garvin, December; The Texas Co. 1 Donham, NE NE NW 22-4n-3w, sand, 6,772-90 ft., IP 70 bbl., 56° distillate, TD 8,049 ft.

UNNAMED—Hughes, August; Pure Oil Co.

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UNNAMED—McClain, December; Sinclair 1 Dennis, C SE NW 13-9n-4w, Hunton, 8,601-50 ft., IP 238 bbl., gravity 39°, TD 8,956 ft.

UNNAMED — Okfuskee, December; Mohawk 1 Foster, SE SW NW 14-10n-9e, Gilcrease, 3,026-62 ft., IP 20 bbl., gravity 33.8°, TD 3,290 ft.

UNNAMED—Stephens, December; Kerr-McGee 1 Jeanette, SE SE NW 25-2s-7w, 2,643-2,760 ft., IP 71,185,000 cu. ft. of gas, TD 2,939 ft.

WANETTE, SOUTHWEST—Pottawatomie, January; Clay & Son, Inc., 1 School Land, SE SE NW 36-6n-2e, Trenton-Viola, 4,566-74 ft., IP 20 bbl., TD 4,886 ft.

WASHINGTON, NORTH — McClain, December; Danciger 1 De Cordova, NW SE SW 35-8n-3w, first Bromide sand, 9,373-75 ft., IP 515 bbl., 65°-distillate, TD 9,382 ft.

WEBB, NORTH—Grant, August, British-American 1 Corneil, NE NE NW 24-28n-3w, Wilcox, 4,685-93 ft., IP 178 bbl., TD 4,693 ft.

NEW PAYS

ARDMORE — Carter, July; Samedan 1 Hedges, NW NE NE 14-5s-1e, sand, 2,715-3,133 ft., IP 2,818,000 cu. ft. of gas, TD 6,004 ft., also an extension to the field.

BETHEL, NORTHEAST—Seminole, September; Traugh 1 Crawford, NW SE NW 24-10n-7e, Gilcrease, 3,467-72 ft. and 3,536-50 ft., IP 15 bbl., gravity 38°, TD 3,636 ft.

BIGHAM—Okfuskee, September; Dunn 1 Palmer, NW NE SE 35-11n-10e, Cromwell, 3,370-3,420 ft., IP 8 bbl., TD 3,420 ft., also an extension to the field.

BIG POND—Creek, October; Murta 1 Abraham, SE SW NW 1-14n-7e, Prue, 2,545-65 ft., IP 25 bbl., gravity 44°, TD 2,616 ft.

CEMENT—Caddo, October; Magnolia 4 Pickard, SW SW SW 25-6n-10w, Melton, 5,396-5,431 ft., IP 1,250,000 cu. ft. of gas, TD 8,830 ft.

CHITWOOD—Grady, January; Gulf Oil Corp. 1 Ida, SE NW NE NW 4-4n-6w, Spears sand, 11,977-12,004 ft., IP 82 bbl., TD 13,100 ft.

COFFEE CREEK — Oklahoma, January; Gulf Oil Corp. 1 Moyer, NE SE NE 15-14n-2w, Hunton, 5,767-86 ft., IP 14 bbl., TD 6,169 ft.

COYLE—Logan, November; Mohawk 1 Marshall, SE SE SE 14-17n-1e, Skinner, 4,495-4,505 ft., IP 16 bbl., gravity 39°, TD 5,160 ft.

CROMWELL—Seminole, June; Mid-Continent Petroleum Corp. 17 Jackson, SE NW SW 4-10n-8e, lower Calvin, 1,752-57 ft., IP 25 bbl., TD 1,757 ft.

CUSHING DISTRICT, EAST—Creek, October; Big Four Drilling Co. 1 White, SW NE SE 18-19n-8e, Red Fork, IP 40 bbl., gravity 38°, TD 2,622 ft.

DOYLE—Stephens, June; The Texas Co. 1 Harrell "B," NW SW SE 3-1n-5w, 5,035-5,120 ft., IP 91 bbl., 62°-gravity distillate, TD 12,196 ft.

GARRETT, NORTHWEST—Kay, September; Carter Oil Co. 1 School Land-Duck, SE SE SW 13-27n-1e, Skinner, 3,570-83 ft., IP 527,000 cu. ft. of gas, TD 3,850 ft.

GREASY CREEK—Hughes, February; Grimes 1 Steil, NE SW SW 17-8n-11e, Gilcrease, 2,946-3,008 ft., IP 1,200,000 cu. ft. of gas, TD 3,599 ft.

GREASY CREEK—Cities Service Oil Co. 1 Smith "B," NW SE SW 12-8n-10e, Booch, 2,336-64 ft., IP 1,100,000 cu. ft. of gas, TD 2,390 ft.

GRIEF CREEK—Hughes, February; Pruitt 1 Chessnut, SE NW SE 14-7n-9e, second Booch, 3,360-90 ft., IP 10 bbl., gravity 40°, TD 4,165 ft.

HIRD, SOUTHEAST—Pontotoc, February; Southwest Natural Gas Co. 1 Hallum, NE SE NE 26-4n-6e, Senora sand, 865-90 ft., IP 2,060,000 cu. ft. of gas, TD 3,220 ft. (gas discovery in new oil field, later included in East Ada District).

HOLDENVILLE, WEST—Hughes, August; Horner 1 Williams, SW NW NW 6-7n-9e, Bartlesville, 2,512-18 ft., IP 1,000,000 cu. ft. of gas, TD 2,036 ft.

IRON POST—Creek, August; Berry 1 Anthis, SE SW SW 35-14n-8e, lower Skinner, 2,520-57 ft., IP 35 bbl., TD 2,562 ft.

JONES — Oklahoma, April; Big Chief Drilling Co. 1 Estes, SW SW NE 23-13n-1e, conglomerate, 4,561-67 ft., IP 53 bbl., gravity 38°, TD 4,580 ft.

KOMALTY—Kiowa, November; Royal 2 Krieger, NE SW NW 10-6n-17w, shale and granite wash, 870-77 ft., IP 2 bbl., gravity 37°, TD 877 ft.

LINDSAY, EAST—Garvin, March; Sinclair 1 McDaniel-Ellison, C NE NW 12-4n-4w, McLish, 10,365-430 ft., IP 1,246 bbl., 52.3°-gravity distillate, TD 10,430 ft., also an extension to the field.

LINDSAY, NORTHEAST—McClain, January; Bauman 1 Wynn, NE SE SW 26-5n-4w, Hunton, 9,994-10,055 ft., IP 18 bbl., gravity 44°, TD 10,138 ft.

MARAMEC—Pawnee, March; Maguire 1 Cave, SW SW NW 10-20n-6e, Bartlesville, 3,140-61 ft., IP 30 bbl., TD 3,161 ft.

MARAMEC, SOUTHEAST—Pawnee, August; Wadsworth 1 Blanchard, SE SE NW 25-20n-6e, Skinner, 2,684-98 ft., IP 3,500,000 cu. ft. of gas, TD 2,703 ft.

MARSHALL—Logan, October; Snowden 1 Ross, W/2 SW NE 32-19n-4w, Layton, 4,670-4,725 ft., IP 12 bbl., TD 6,112 ft.

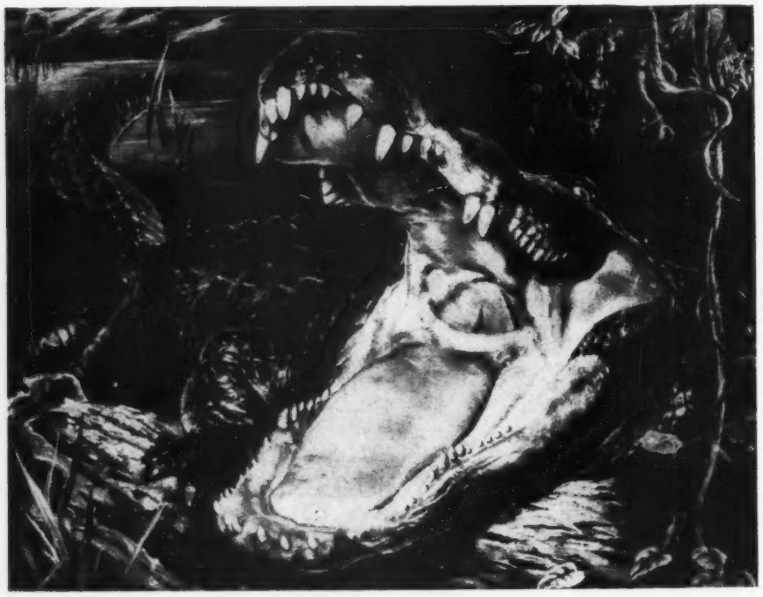
MEEKER, SOUTHWEST — Lincoln, November; Smith 1 Jones, NW NW SE 35-12n-3e, unconformity, 4,937-47 ft., IP 19 bbl., TD 5,609 ft. (pool opener drilled deeper).

MORSE DISTRICT—Okfuskee, March; Wilcox 2 Woodward, NE NW NE 13-12n-9e, Wilcox, 3,903-13 ft., IP 52 bbl., TD 3,915 ft.

MORSE, WEST—Okfuskee, August; Wilcox 3 Mackey, SW SW SE 24-12n-9e, Cromwell, 3,214-30 ft., IP 100 bbl., gravity 38°, TD 3,258 ft.

NEW HOPE, SOUTHEAST—Garvin, July; Carter Oil Co. 1 Hall-Newey, C NE SW 9-4n-3w, Gibson sand, 6,935-80 ft., IP 60 bbl., gravity 43.6°, TD 7,157 ft., also an extension to the field.

PANTHER CREEK—Carter, March; Sinclair 1 Tulsa University "B," NW SE SW



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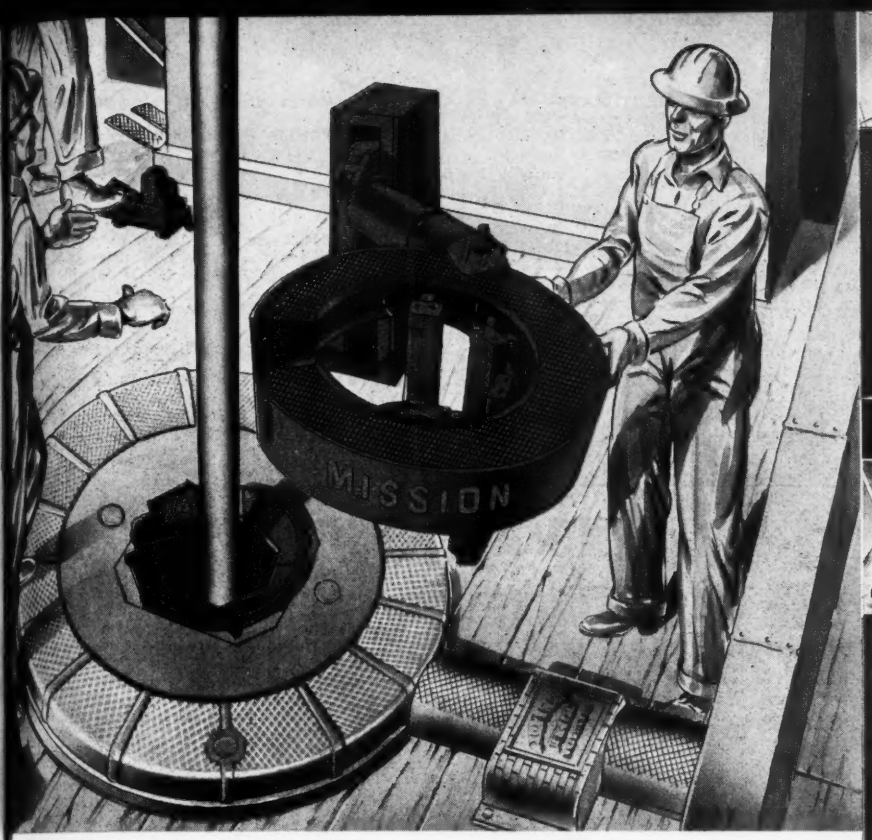

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One of the "Super-Speed" features of MISSION Power Slips is that they swing on and off the pipe instantly, like pipe tongs. A quickly removable and replaceable gate provides the opening. When not in use, the slips swing out of the way. When needed they swing to position instantly.

Two other factors are basic in the "Super-Speed" of these power slips. One is the efficient raising and lowering mechanism. Operated by two foot levers, this mechanism drops the slips into holding position and raises them to open position with instant speed and precision. The other factor is the MISSION patented "Rolling Dog." The power slips use MISSION standard one-piece "Rolling Dog" Slips, the only slips which take hold instantly and smoothly, without slippage, and let go without sticking. This positive, smooth action in taking hold and letting go tremendously speeds round trips.

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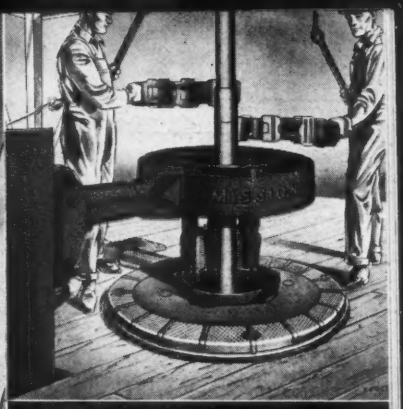
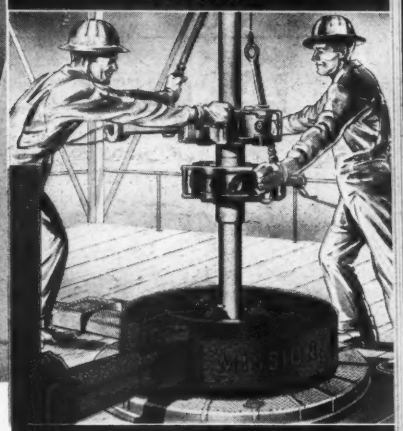
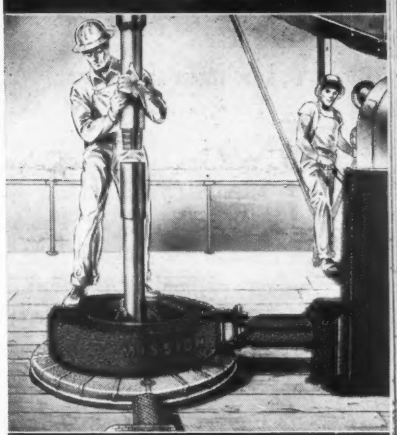


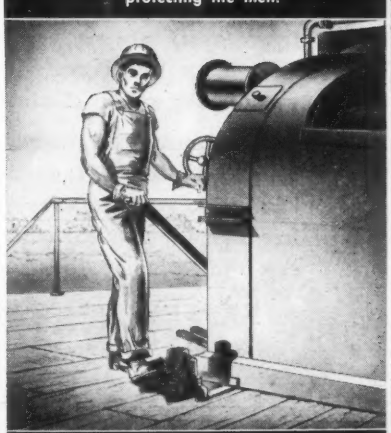
Raised position for running or pulling pipe.



Engaged position for making up or breaking out pipe.



Lifting-ring remains stationary, protecting the men.



Foot-actuated control valve, operated by driller.

33-3n-2w, Hunton, 6,675-6,805 ft., IP 486 bbl., gravity 40.8°, TD 6,807 ft.

SHOLEM ALECHEM—Stephens, February; Magnolia Petroleum Co. 1 Crews, SW NE NE 12-1s-4w, sand, 3,480-99 ft., IP 8 bbl., gravity 30°, TD 5,806 ft.

SHOLEM ALECHEM — Stephens, March; Magnolia Petroleum Co. 5 Martin, SW NE NE 13-1s-4w, sands, 4,670-90 ft., IP 246 bbl., gravity 34.9°, TD 5,426 ft.

SHOLEM ALECHEM—Stephens, March; Magnolia Petroleum Co. 5 Hanson, NW NE NW 12-1s-4w, Springer 4,695-4,800 ft., IP 149 bbl., gravity 31.3°, TD 5,270 ft.

SHOLEM ALECHEM—Carter, May; Rocket 15 Jordan, SW NE NW 19-1s-3w, sands, 2,947-3,044 ft., IP 3,000,000 cu. ft. of gas, TD 5,008 ft.

SHOLEM ALECHEM—Carter, December; Seaboard 2 Carpenter, SE SW SW 11-2s-3w, sands, 3,558-72 ft., IP 10 bbl., gravity 24°, TD 7,488 ft.

SPORN, NORTHEAST — Payne, May; Westcott 1 Gibson, SW SW SE 10-17n-3e, Bartlesville, 3,950-58 ft., IP 75 bbl., TD 4,060 ft., also an extension to the field.

WALTERS—Cotton, January; Harper 1 Grimes, NE NW NE 21-1s-10w, sand, 2,438-48 ft., IP 12 bbl., gravity 31.6°, TD 2,448 ft.

WEWOKA DISTRICT, NORTH—Seminole, May; Byrd Oil Corp. et al 1 Bender, NW NE SW 3-8n-8e, Gilcrease, 3,179-94 ft., IP 80 bbl., gravity 38°, TD 3,195 ft.

WITCHER—Oklahoma, January; Skelly Oil Co. 1 Adam, C SW NW 29-13n-2w, sand, 6,161-76 ft., IP 40 bbl., TD 6,235 ft.

WITCHER—Oklahoma, January; Peppers 1 Eastland, NW SW NW 32-13n-2w, unconformity-Bois d'Arc, 6,175-6,215 ft., IP 150 bbl., TD 6,215 ft.

WITCHER—Oklahoma, May; Skelly Oil Co. 1 Adam, C SW SE 20-13n-2w, dual completion, IP 37 bbl. from Hunton lime and 2,000,000 cu. ft. of gas from unconformity sand.

WITCHER—Oklahoma, April; Gulf Oil Corp. 1 Joy, C SW NE 30-13n-2w, sand, 6,232-42 ft., IP 421 bbl., gravity 41.5°, TD 6,277 ft.

NEW POOLS

ALBION—Reno, May; Helmerich & Payne 1 Stucky, SW SW SW 14-26s-6w, Mississippian, 3,654-59 ft.. IP 51 bbl., TD 4,200 ft.

BARRY, WEST—Rooks, July; Westgate-Greenland Oil Co. 1 McClelland, NW NW NE 4-9s-19w, Arbuckle 3,442-44 ft., IP 314 bbl., gravity 23°, TD 3,444 ft.

BATTLE HILL, NORTH — McPherson, April; Westgate-Greenland Oil Co. 1 Ruth, NE NE SW 13-18s-1w, Mississippian, 2,811-26 ft., IP 317 bbl., TD 2,826 ft., old well worked over.

BERLAND—Rooks, May; The Texas Co. 1 Berland, NE SE SW 19-10s-19w, Arbuckle 3,802-07 ft., IP 159 bbl., TD 3,807 ft.

BOWMAN, NORTH—Rice, January; C. E. Ash 1 Wendel "A," SW SW NW 16-19s-10w, Arbuckle, 3,331-36 ft., IP 25 bbl., TD 3,357 ft.

BOX—Cowley, February; K. T. Weidman 1 Hayden Smith, SW NW NW 28-30s-7e, Mississippian, 2,842-54 ft., IP 7 bbl., TD 2,854 ft.

BRADBRIDGE—Edwards, August; Max Cohen 1 Bright, NW NW SW 1-24s-16w, Lansing, 3,686-3,706 ft., IP 15,000,000 cu. ft. of gas, TD 3,983 ft.

BRYANT—Barton, December; Alpine Oil & Refining Co. 1 Bryant, NW SW NE 27-20s-12w, Arbuckle, 3,383-3,405 ft., IP 171 bbl., TD 3,405 ft.

CANYONS—Ellis, May; Cities Service Oil Co. 1 Hall "M," SE SE SE 11-12s-17w, Lansing, 3,307-13 ft., IP 170 bbl., TD 3,690 ft.

CHAMBERS—Sedgwick, May; Wentworth 1 Chambers, SE SE SE 10-29s-2w, Mississippian, 3,540-50 ft., IP 25 bbl., TD 3,550 ft.

CHANDLER—Rooks, June; Harry Gore 1 Ruder, SW SW NE 14-9s-19w, Arbuckle, 3,455-62 ft., IP 3,000 bbl., TD 3,462 ft.

COMBS, NORTHEAST — Butler, July; Veeder Supply and Mid-Plains Oil Co. 1 Hampton, SE SE SW 27-29s-5e, Bartlesville, 2,813-38 ft., IP 50 bbl., TD 2,838 ft.

CORBIN (REVIVED)—Sumner, November; Alpine Oil & Royalty Co. 1 Douglas, C E/2 SE NW 23-34s-2w, Simpson, 4,475-81 ft., IP 50 bbl., TD 4,481 ft.

COTTONWOOD CREEK—Barber, October; Great Lakes Carbon Co. 1 Werner, SW SE SE 21-30s-14w, Simpson, 4,582-94 ft., IP 4,500,000 cu. ft. of gas, TD 4,608 ft.

DE GEER—Barber, May; Lion Oil Co. 1 De Geer, NE NE SW 2-33s-15w, Viola, 5,173-76 ft., IP 3,000 bbl., gravity 41.8°, TD 5,434 ft.

DILLNER, NORTHWEST—Russell, January; C. G. Kessinger and Stearns 1 Billings "C," NE NE NE 27-13s-15w, Arbuckle, 3,320-31 ft., IP 39 bbl., TD 3,331 ft.

ELROD (REVIVED)—Cowley, June; C. B. Stewart 1 Elrod, SE NE NE 4-32s-5e, Layton, 2,392-2,428 ft., IP 20 bbl., TD 2,428 ft.

ENTERPRISE—Cowley, July; Meade Production 1 McMichael, NW SE SW 35-33s-3e, Bartlesville, 3,282-3-323 ft., IP 25 bbl., TD 3,398 ft.

EXCEL—Kiowa, September; Rine Drilling Co. 1 Lorimor, C SE NW 20-30s-20w, Mississippian, 5,126-54 ft., IP 219 bbl., TD 5,278 ft.

FAIRVIEW—Sedgwick, May; J. P. Gaty 1 Phillips, NE NW SE 8-26s-2e, Mississippian, 2,960-61 ft., IP 1,173 bbl., TD 2,961 ft.

FRISBIE, NORTHEAST — Pratt, July; Skelly Oil Co. 1 Kipp, SE SE NW 4-26s-13w, Lansing, 3,788-3,800 ft., IP 720 bbl., TD 4,370 ft.

GARFIELD—Pawnee, April; N.C.R.A. 1 Hutchinson, SE SE NW 17-23s-17w, Kinderhook, 4,270-87 ft., IP 25 bbl., TD 4,655 ft.

GEMEINHARDT—Rice, September; Skelly Oil Co. 1 Gemeinhardt, NW NW SE 18-18s-10w, Arbuckle, 3,293-97 ft., IP 276 bbl., TD 3,297 ft.

GRA-ROOK—Rooks, October; Nadel & Gussman 1 Baldwin, NW NW NW 30-9s-20w, Arbuckle, 3,869-72 ft., IP 1,226 bbl., TD 3,872 ft.

GUYOT—Butler, November; Shawver-

LORAIN MULTI-FUEL ENGINES give you 6 big advantages

1. Full diesel or gas operation
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4. Wide power output range
5. Quick, easy starting
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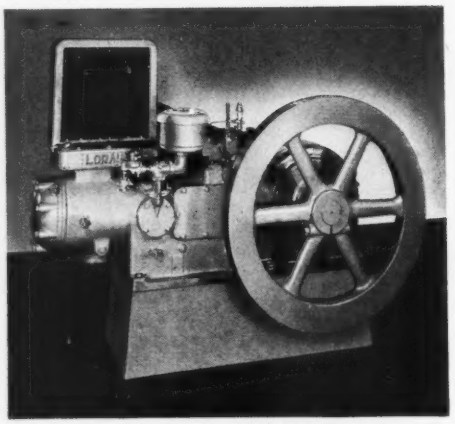

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LORAIN Diesel or Gas Engines are built with extra stamina to withstand hard, continuous service under rugged conditions. Their simple two-cycle, single-cylinder design reduces moving parts to a minimum.

Condenser-type cooling system maintains uniform engine temperature under any load conditions *regardless of climatic temperature.* Make-up water is negligible . . . water-jacket scale is eliminated.

Large capacity oil reservoir with combination forced-feed and splash lubrication system assures trouble-free operation. Wet-sleeve, alloy cast-iron cylinder liner can be changed easily, quickly in the field. This eliminates costly reboring, reduces downtime.

For dependable, lower-cost power on diesel oil, clean crude, natural gas or butane, specify Lorain Multi-Fuel Engines. *They operate longer without attention . . . operate longer between overhauls!* Write for literature today.

CONDENSED SPECIFICATIONS

	TYPE "L"	TYPE "O"
Bore	7½"	9½"
Stroke	8"	10"
Speed Range RPM	300-600	240-480
Rated Horsepower	10.7-21.4	17.2-34.3
Over-all Height	53"	59"
Over-all Length	72"	88"
Over-all Width	48"	58"
Approx. Shipping Wt. (Export)	3050 lbs.	4500 lbs.

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FOR LONG LIFE AND ECONOMY

Graham 1 Guyot, 5-29s-5e, Bartlesville, 2,796-2,804 ft., IP 30 bbl., TD 2,804 ft.

HISS, SOUTHEAST—Barton, December; Brack Oil Co. 1 Wright, NE NE SW 32-20s-13w, Arbuckle, 3,545-61 ft., IP 190 bbl., TD 3,561 ft.

HOMESTEAD—Barton, November; Raymond Geer 1 Eveleigh, SE SW NE 22-18s-13w, Arbuckle, 3,310-19 ft., IP 22 bbl., TD 3,348 ft.

HUFFORD—Stafford, April; Phil-Han Oil Co. 1 Hufford, SW SW NW 33-21s-13w, Arbuckle, 3,755-70 ft., IP 368 bbl., TD 3,770 ft.

HUNTER, NORTH—Saline, June; Deep Rock Oil Co. 1 James, SW SW NW 8-16s-1w, Mississippian, 2,674-90 ft., IP 60 bbl., TD 2,696 ft.

JELINEK—Rooks, January; Derby Oil Co. and Peel 1 Jelinek, NW NE SE 23-9s-19w, Arbuckle, 3,540-52 ft., IP 2,292 bbl., gravity 23°, TD 3,552 ft.

KELLY—Stafford, October; Delta and Bennett & Roberts Drilling Co. 1 Kelly, NW NW SE 35-23s-12w, Arbuckle, 3,870-75 ft., IP 84 bbl., TD 3,875 ft.

KISMET—Seward, June; Stanolind Oil & Gas Co. 1 Wheatley, NE NE SW 23-33s-31w, Lansing, 5,096-5,100 ft., IP 132 bbl., gravity 38°, TD 7,340 ft.

LAKE BARTON—Barton, August; The Texas Co. 1 Trester, SW SW SW 21-18s-13w, Arbuckle, 3,372-89 ft., IP 28 bbl., TD 3,389 ft.

LAUDICK — Barton, January; Derby Drilling 1 Laudick, SE SW NW 28-16s-12w, Arbuckle, 3,382-92 ft., IP 195 bbl., TD 3,430 ft.

LONE STAR—Rooks, July; Bay Petroleum Co. 1 Hunter, SW SW SW 4-8s-17w, Arbuckle, 3,383-99 ft., IP 80 bbl., TD 3,399 ft.

LOST SPRINGS, SOUTHEAST—Marion, September; Frank Monroe 1 Lueker, NE NE NW 10-18s-4e, Mississippian, 2,345-87 ft., IP 12 bbl., TD 2,387 ft.

MADDEN (REVIVED) — Ellis, March; Jones & Shelburne & Farmer 1 Madden "D," NE NW NW 26-15s-18w, Lansing, 3,328-33 ft., IP 75 bbl., TD 3,333 ft.

MARC—Rooks, November; Aylward Drilling Co. et al 1 Marcotte, SE SE SW 18-9s-19w, Lansing, 3,370-75 ft, IP 91 bbl., TD 3,595 ft.

MAXWELL—McPherson, October; Bay Petroleum Co. and Anderson-Prichard 1 State "B," SE SE SW 17-18s-1w, Lansing, 2,846-71 ft., IP 41 bbl., TD 2,871 ft.

McHALE — Rooks, August; N.C.R.A. 1 Smith, SE SE SW 8-9s-18w, Arbuckle, 3,494-99 ft., IP 1,480 bbl., TD 3,499 ft.

NELLIE—Stafford, July; J. M. Huber 1 Symns, NE NE SE 28-22s-14w, Lansing, 3,696-3,704 ft., IP 480 bbl., gravity 29°, TD 3,944 ft.

NEOLA (REVIVED) — Stafford, June; Derby Oil and Kiowa 1 Tarrant, SW NE SW 15-25s-11w, Viola, 3,921-24 ft., IP 30 bbl., TD 3,294 ft.

NETTIE—Rooks, November; Phillips Oil Co. 1 Nettie, SE SE SW 34-9s-17w, Lansing, 3,243-50 ft. and 3,260-68 ft., IP 168 bbl., TD 3,545 ft.

NEY—Russell, May; Wood River Oil & Refining Co. 1 Ney, SW SW NE 31-15s-12w, Lansing, 3,240-50 ft., IP 26 bbl., TD 3,363 ft.

NORTHAMPTON—Rooks, March; Nadel & Gussman et al 1 Marcotte, NW NW SW 26-9s-20w, Arbuckle, 3,803-14 ft., IP 3,000 bbl., TD 3,814 ft.

POLIFKA—Ellis, November; V. D. Sidey 1 Polifka, NW SE SE 7-13s-17w, Arbuckle, 3,640-71 ft., IP 127 bbl., TD 3,671 ft.

PROSPER (REVIVED)—Rice, September; Birmingham-Bartlett 1 Habiger "C," NW NE SE 6-18s-9w, Arbuckle, 3,234-43 ft., IP 84 bbl., TD 3,243 ft.

ROLLING GREEN—Barton, October; Cardinal Oil Co., Inc. 1 Shartz, NW NW SW 36-20s-13w, Lansing, 3,257-63 ft., IP 137 bbl., TD 3,545 ft.

STRAHM—Nemaha, November; Carter Oil Co. 1 Strahm, SW SW NW 27-2s-14e, Hunton, 2,877-79 ft., IP 16 bbl., TD 2,879 ft.

SYMS, EAST—Stafford, February; Armer & Lindas 1 Hammeke, NW NW SE 21-21s-12w, Arbuckle, 3,566-75 ft., IP 50 bbl., TD 3,575 ft.

TOWANDA—Butler, May; Rex & Morris and E. H. Adair 2 Rice, SE SE NE 5-26s-4e, Viola, 3,565-66 ft., IP 50 bbl., TD 2,566 ft.

TWIN MOUNDS—McPherson, April; Don Ingling 1 Miller, SE SE NW 1-18s-2w, Mississippian, 2,845-51 ft., IP 858 bbl., TD 2,851 ft.

WEIGEL—Ellis, November; J. M. Huber and Deep Rock Oil Co. et al 1 Weigel, NW NW SE 18-12s-16w, Lansing, 3,368-76 ft., IP 16 bbl., TD 3,662 ft.

WELCH, WEST—Rice, April; Branine & Holl et al 1 Turner, SE SE SE 6-21s-6w, Mississippian, 3,498-3,507 ft., IP 40 bbl., TD 3,507 ft.

WHITE COTTON—Sedgwick, September; J. P. Gaty 1 Brown, NE NW NE 30-26s-2e, Burgess, 2,957-61 ft., IP 3,000 ft., TD 2,961 ft.

YEAKLEY—Barton, August; Sohio Oil Co. et al 1 Yeakley, NW NW NW 17-18s-13w, Arbuckle, 3,318-25 ft., IP 99 bbl., TD 3,325 ft.

UNNAMED—Greenwood, October; Ward McGinnis 1 Rhodes, NE NE SE 32-25s-11e, Mississippian, 1,971-89 ft., IP 15 bbl., TD 2,075 ft.

UNNAMED—Johnson, December; G. L. Smith 1 Pretz, SW SE NW 1-14s-22w, Marmaton, 628-45 ft., IP 500,000 cu. ft. of gas, TD 1,560 ft.

UNNAMED—Meade, May; Helmerich & Payne et al 1-A Adams, SW SW NE 24-34s-30w, Mississippian and Morrow sands, 5,892-5,912 ft., 5,920-54 ft., 5,984-6,000 ft. and 6,032-51 ft., IP 5,200,000 cu. ft. of gas, TD 6,509 ft.

UNNAMED—Rooks, December; W. L. Hartman 1 Westhusin, SW SW SW 31-9s-17w, Lansing, 3,477-88 ft., IP 12 bbl., TD 3,615 ft.

NEW PAYS

CANTON, EAST—McPherson, October; George Hess 1 Bryan, NW NW SE 23-19s-1w, Mississippian, 2,920-27 ft., IP 3,017,000 cu. ft. of gas, TD 2,927 ft.

KOWALSKY—Barton, April; El Dorado Refining Co. 1 DeWerff, NE SE SE 25-20s-12w, Lansing, 3,185-88 ft., IP 20 bbl., TD 3,409 ft., also an extension to the field.

RYAN—Rush, September; Cities Service Oil Co. 1 Krueger, SE SE SE 35-19s-16w, Dodge and Lansing, 3,234-38 ft., 3,258-62 ft., 3,423-29 ft., 3,444-55 ft., 3,469-77 ft., 3,502-06 ft., and 3,537-44 ft., IP 905 bbl., TD 3,683 ft.

MICHIGAN

NEW POOLS

CASNOVIA, SECTION 26—Muskegon, April; Rex Oil & Gas Co. 1 Todd, SW SW SW 26-10n-13w, Berea topped at 1,532 ft., IP 139,000 cu. ft. of gas, TD 2,293 ft.

CLAM UNION—Missaukee, September; Gulf Refining Co. 1 Alderman, SW NW NE 2-21n-6w Michigan Stray topped at 1,489 ft., IP 200,000 cu. ft. of gas, TD 3,858 ft., (dry in Dundee at 3,847 ft., plugged back to Stray).

EDEN—Mason, August; Superior Oil Co. 1 Sippy et al, SE SE NE 26-17n-16w, Traverse, 1,677-82 ft., IP 720 bbl., gravity 60°, TD 1,682 ft.

HEATH (REVIVED)—Allegan, July; J. W. Lang 1 Boyce, NE NE NE 14-3n-14w, Traverse topped at 1,519 ft., IP 100 bbl., TD 1,523 ft. (reopened and extended the field).

HOLTON—Muskegon, December; Muskegon Development Co. 1 Haxel Grove School District, NE NE NW 9-12n-15w, Traverse, 1,992-94 ft., IP 30 bbl., TD 1,994 ft.

HOPKINS, SOUTH—Allegan, May; Eric P. Schelling 1 Barnhardt, SW NE NE 30-3n-12w, Traverse topped at 1,537 ft., IP 350 bbl., TD 1,539 ft.

ISABELLA—Isabella, November; Merrill Drilling Co. 1 Sheahan, SE SW SW 7-15n-4e, Dundee, 3,782-88 ft., IP 172 bbl., TD 3,788 ft.

LEBANON—Clinton, December; Mercer Oil Co., Inc., 1 Werner, SW SW SW 34-8n-4w, Traverse, 2,548-49 ft., IP 25 bbl., TD 2,549 ft.

NEWARK—Gratiot, May; Harper & Turner Oil Co. and Sohio Petroleum Co. 1 McLaren et al NW SE NW 25-10n-4w, Michigan Stray topped at 979 ft., IP 4,290,000 cu. ft. of gas, TD 987 ft.

NILES—Berrien, March; Sewage Sanitation Co. 1 Foster Estate, SW NW NW 2-7s-17w, Traverse, 645-55 ft., IP 125 bbl., TD 655 ft.

NORTHVILLE—Washtenaw, January; Homer L. Heath 1 Agent's Ely, SE NW NE 2-1s-7e, Dundee topped at 781 ft., IP 320,000 cu. ft. of gas, TD 823 ft.

PENTWATER—Oceana, June; Roosevelt Oil Co. 1 McMillen, SW NW NW 6-16n-17w, Dundee topped at 2,087 ft., IP 100 bbl., TD 2,092 ft.

STANDISH—Arenac, December; Frank E. Roush 1 Angus, SE SE NE 10-18n-4e, Richfield, 4,108-11 ft., IP 30 bbl., TD 4,111 ft.

STERLING—Arenac, January; Don Rayburn 1 Goodroe, SE NE SE 18-19n-4e, Dundee topped at 2,771 ft., IP 40 bbl., TD 2,898 ft.

SYLVAN—Osceola, August; Gulf Refining Co. 1 State-Sylvan, NW SE SW 9-18n-7w, Dundee topped at 3,928 ft., IP 1,793 bbl., TD 3,940 ft.

UNNAMED—Allegan, November; Chester Anderson 1 Konecke, NW SE SW 27-2n-13w, Traverse, 1,357-61 ft., IP 8 bbl., TD 1,361 ft.

UNNAMED—Osceola, November; Jetter & de Krafft 1 Bruske, SW NW SE 26-18n-10w, Traverse topped at 3,111 ft., IP 40 bbl., TD 3,123 ft.

UNNAMED—St. Clair, May; William Morriss 1 May, NW SE SE 32-7n-17e, Dundee, 576-601 ft., IP 3 bbl., TD 601 ft. (shallowest oil producer in the state).

UNNAMED—St. Clair, July; K. E. Brooks 1 Fee, NE SW SW 3-6n-17e, Dundee, 538-45 ft., IP 500,000 cu. ft. of gas, TD 695 ft. (shallowest producer in the state).

NEW PAYS

EDEN—Mason, September; Superior Oil Co. 2 Sippy Unit, NE SE NE 26-17n-16w, Monroe, 2,353-59 ft., IP 120 bbl., TD 2,359 ft.

STERLING—Arenac, July; Don Rayburn 1 Hertzberg, SE SE NW 18-19n-4e, Traverse, 1,966-71 ft., IP 25 bbl., TD 1,978 ft.

ILLINOIS

NEW POOLS

AKIN, WEST—Franklin, October; Taylor & Schumaker 1 U. S. Coal & Coke Co., SW NW NW 21-6s-4e, IP 80 bbl., O'Hara, 3,044-72 ft. and Rosiclare, 3,082-94 ft., TD 3,146 ft.

ASSUMPTION—Christian, October; National Associated Petroleum Co. 1 C. G. Sincox, NE NW NE 29-13n-1e, IP 31 bbl., Devonian, 2,327-58 ft., TD 3,070 ft.

CLAY CITY, NORTH—Clay, February; Calvert & Willis and Ashland Oil & Refining Co. 1 Bemis, SW SE NE 8-3n-8e, IP 365 bbl., Rosiclare, 3,006-08 ft. and 3,019-22 ft., and McClosky 3,036-42 ft., TD 3,072 ft.

DIVIDE, SOUTH—Jefferson, March; W. R. McKain 1 Cocke, SE SE NW 12-2s-3e, IP 354 bbl., McClosky, 2,871-74 ft., TD 2,875 ft.

EVERS — Effingham, January; Central Pipe Line Co. 1 J. Mette, SE SE SW 33-8n-7e, IP 57 bbl., McClosky, 2,659-76 ft., TD 2,808 ft.

EVERS, SOUTH—Effingham, June; Dunbar Drilling Co. 1 J. Repking, NW SW NE 8-7n-7e, IP 30 bbl., Rosiclare, 2,652-61 ft., TD 2,690 ft.

GOLDENGATE, WEST—Wayne, March; Cities Service Oil Co. 1 Bryant, SE SE SW 5-2s-9e, IP 58 bbl., Aux Vases, 3,226-44 ft., TD 3,480 ft.

HERALD, NORTH—White, July; National Associated Petroleum Co. 1 Garrison, NW NE NE 24-6s-9e, IP 56 bbl., Aux Vases, 2,900-08 ft., TD 2,908 ft.

LANCASTER, NORTH—Lawrence, May; J. S. Young, Jr., 1 Frick & Limp, SE SW NE 24-2n-13w, IP 5 bbl., Bethel sand, 2,292-2,308 ft., TD 2,534 ft.

LIVINGSTON—Madison, July; J. L. Neary 1 Henke, SW SW SW 17-6n-6w, IP 145 bbl., Pennsylvania sand, 528-35 ft., TD 536 ft.

MAUD, CENTRAL—Wabash, August; C. E. Skiles 1 H. Groff, SW SE SW 21-1s-13w, IP 104 bbl., Bethel sand, 2,607-17 ft., TD 2,622 ft.

MAUD, WEST—Wabash, August; O. D. Sharp 1 G. Wells, SE SW SE 29-1s-13w, IP 17 bbl., Cypress, 2,428-34 ft., TD 2,570 ft.

MAYBERRY, NORTH—Wayne, February; George & Wrather 1 M. Monroe, NE NW NE 27-2s-6e, IP 75 bbl, McClosky, 3,333-36 ft., TD 3,440 ft.

MILLS PRAIRIE—Edwards, June; O. Weston 1 V. Hasewinkle, NW NW NW 22-1n-14w, IP 33 bbl., lower O'Hara, 2,924-29 ft., TD 2,924 ft.

PARKERSBURG, SOUTH—Edwards, July; Bridger-Basin 1 Schmidt, NE NE SW 8-1n-14w, IP 36 bbl., Bethel, 2,813-21 ft., TD 3,085 ft.

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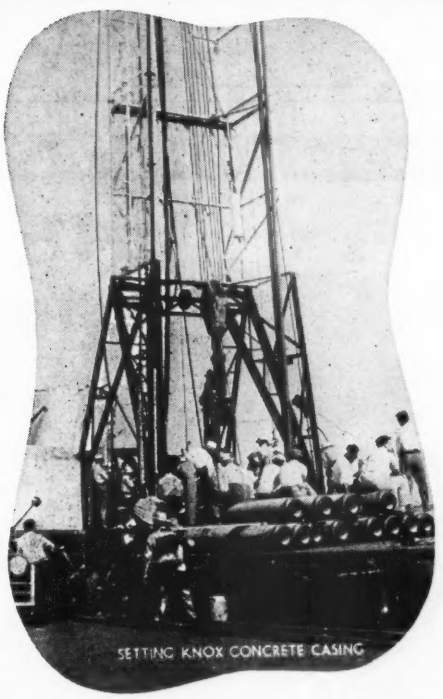

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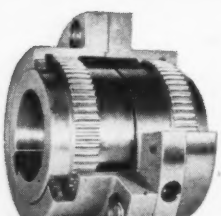

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PASSPORT, SOUTH—Richland, May; Arvin Drilling Co. 1 A. McDade, SE NW SW 17-4n-9e, IP 23 bbl., Cypress, 2,665-81 ft., TD 2,782 ft.

ROCHESTER—Wabash, September; Lynch Oil Co. 1 Yarbor, NE NW NE 14-2s-13w, IP 600 bbl., Waltersburg, 1,939-57 ft., TD 1,957 ft. (This is the first well in Rochester pool in Illinois but is an extension of Rochester pool in Indiana.)

RUSSELL—Clay, December; J. L. Black and Central Pipe Line Co. 1 Edward Hammer, SW NE SW 5-4n-6e, IP 200 bbl., Rosiclare, 2,736-44 ft. and 2,748-53 ft., TD 2,763 ft.

SAILOR SPRINGS, CENTRAL—Clay, July; New Pennsylvania Development Co. 1 Schnautz, SE SW NE 31-4n-8e, IP 2 bbl., Rosiclare, 3,013-17 ft., TD 3,109 ft.

SAILOR SPRINGS, NORTH—Clay, June; Rudy and Witt 1 La Rue, SW SW NW 16-4n-8e, IP 66 bbl., Rosiclare, 2,986-91 ft., TD 2,991 ft.

SAILOR SPRINGS, WEST—Clay, May; Diamond Oil Exploration Co. 1 Tolliver Woods, NE SW NW 15-4n-7e, IP 56 bbl., Cypress, 2,602-11 ft., TD 2,620 ft.

SHAWNEETOWN, NORTH—Gallatin, October; Johnston Drilling Co. 1 G. E. Mathis, SE NE NW 17-9s-10e, IP 68 bbl., McClosky, 3,058-67 ft., TD 3,091 ft.

STRINGTOWN, EAST—Richland, November; Calvert & Willis and Aurora Gasoline Co. 1 H. Schneider, NW NW NW 4-4n-14w, IP 64 bbl., McClosky, 3,010-14 ft., TD 3,017 ft.

SUMPTER, SOUTH—White, May; W. O. Allen 1 Hughes, SE SW NW 2-5s-9e, IP 25 bbl., Waltersburg, 2,570-80 ft., TD 2,911 ft.

UNNAMED—Christian, December; National Associated Petroleum Co. 1 J. H. Lawrence, SE NE SE 9-13n-1e, IP 30 bbl., Trenton, 2,360-2,419 ft., TD 2,445 ft.

UNNAMED—Edgar, August; C. M. Faulkner 1 R. Stoneburner, SW SW NE 3-13n-13w, IP 4 bbl., Pennsylvania sand, 424-30 ft., TD 457 ft.

NEW PAYS

ADEN CONSOLIDATED—Wayne, February; H. H. Weinert 2 H. J. Morlan, NE SE NW 33-2s-14w, IP 22 bbl., Salem limestone, 3,737-53 ft., TD 3,756 ft.

BELLE PRAIRIE—Hamilton, July; Phillips Petroleum Co. 1 Young, SE SW SW 12-4s-6e, IP 44 bbl., Aux Vases, 3,251-56 ft., TD 3,425 ft.

BONE GAP, SOUTH—Edwards, January; Phillips Petroleum Co. 1 Bone, NE NE NW 19-1s-14w, IP 45 bbl., lower O'Hara, 3,058-63 ft., TD 3,165 ft.

CLAY CITY, NORTH—Clay, August; Calvert & Willis and Ashland Oil & Refining Co. 6-B Bemis, SW SE NE 8-3n-8e, IP 90 bbl., Cypress, 2,649-58 ft., TD 2,658 ft.

CROSSVILLE—White, July; George Engle 1 Ridenhour, NE NE SE 10-4s-10e, IP 40 bbl., Bethel sand, 2,881-89 ft., TD 3,136 ft.

DIVIDE, EAST—Jefferson, April; National Associated Petroleum Co. 3 McElrary, NE SW SE 17-1s-4e, IP 175 bbl., Rosiclare, 2,729-32 ft., TD 2,732 ft.

DIVIDE, EAST—Jefferson, March; William Bell 1 Raymond Sledge, NE NE NW 20-1s-4e, IP 113 bbl., McClosky, 2,723-70 ft., TD 2,810 ft.

GRAYVILLE, WEST—White, July; Yingling & Duncan 3 Kuykendall, NE NE SW 23-3s-10e, IP 60 bbl., Paint Creek, 2,992-3,008 ft., TD 3,266 ft.

GRAYVILLE, WEST—White, May; R. Mitchel 1 Hatcher, SE SE SE 22-3s-10e, IP 42 bbl., Biehl, 1,957-66 ft., TD 3,305 ft.

INMAN, WEST—Gallatin, April; Kingwood Oil Co. 1 H. M. Fillingham, NW SW NW 22-8s-9e, IP 3 bbl., Tar Springs, 2,184-2,210 ft., and lower O'Hara, 2,960-68 ft., TD 2,984 ft.

JOHNSON, NORTH—Clark, March; Young Oil Corp. 1-A George T. Risinger, W½ SE SE 25-10n-14w, IP 5 bbl. Devonian, 1,575-85 ft., TD 1,588 ft.

MATTOON—Coles, August; W. Duncan 7 G. Taylor, NW NE NW 11-12n-7e, IP 3,000,000 cu. ft. of gas, Dutch Creek, 3,122-32 ft., TD 3,228 ft.

MAUD—Wabash, April; C. E. Skiles 2 E. Alka, SE SW SE 34-1s-13w, IP 70 bbl., lower O'Hara, 2,608-26 ft., TD 2,678 ft.

MAUD—Wabash, July; C. E. Skiles 2-A Schrodt, SE SW NE 3-2s-13w, IP 100 bbl., Biehl sand, 1,720-32 ft., TD 2,355 ft. (The well also produced from the Cypress at 2,337-47 ft.)

McKINLEY—Washington, July; W. C. McBride 1 Hunleth, SE NE NW 29-3s-4w, IP 225 bbl., Silurian, 2,211-75 ft., TD 3,983 ft.

MT. CARMEL, WEST—Wabash, June; Brubeck & Pappas 1 G. Chapman, NW SE NE 14-1s-13w, IP 115 bbl., lower O'Hara, 2,542-50 ft., TD 2,589 ft.

MT. CARMEL, WEST—Wabash, February; Gilliam Drilling Co. 1 C. H. Worth heirs, NW NW SE 23-1s-13w, IP 219 bbl., Cypress sand, 2,280-88 ft., TD 2,288 ft.

OMAHA—Gallatin, June; Carter Oil Co. 2 R. M. York, SE SE SW 33-7s-8e, IP 139 bbl., Biehl sand, 1,320-51 ft., TD 1,353 ft.

PASSPORT, SOUTH—Richland, August; Arvin Drilling Co. 1 Stone, NE SE SE 18-4n-9e, IP 54 bbl., Rosiclare, 3,027-33 ft., TD 3,033 ft.

ROCHESTER—Wabash, October; Lynch and Alberding 1 J. W. Legier, SE NE SW 14-2s-13w, IP 75 bbl., Pennsylvanian, 1,276-98 ft., TD 1,968 ft.

SAILOR SPRINGS, WEST—Clay, June; Diamond Oil Exploration Co. 1 D. V. Dillman, NW SW SE 15-4n-7e, IP 18 bbl., Rosiclare, 2,958-60 ft., TD 2,996 ft.

SHATTUC—Clinton, November; Talbot Oil Co. 1 L. C. Gullick, S½ SE NE 28-2n-1w, IP 50 bbl., Trenton, 4,000-40 ft., TD 4,071 ft.

WHITTINGTON—Franklin, October; George & Wrather and Aurora Gasoline Co. 1 Wilcox, SE SE SW 20-5s-3e, IP 92 bbl., Hardinsburg, 2,308-18 ft., TD 2,318 ft.

WHITTINGTON, WEST—Franklin, January; B. D. Jones 1 J. T. Johnson, SW SW SE 14-5s-2e, IP 157 bbl., lower O'Hara, 2,798-2,804 ft., TD 2,804 ft.

INDIANA

NEW POOLS

CYPRESS—Vanderburgh, June; Joe Reznik 1 B. Edmond et al, NW SW SW 10-7s-11w, IP 75 bbl., McClosky, 2,436-39 ft., TD 2,439 ft.

DARMSTADT—Vanderburgh, August; Gilliam Drilling Co. 1 Henry Spilker, SE SW NW 12-5s-11w, IP 198 bbl., McClosky, 2,452-58 ft., TD 2,597 ft.

FORD—Posey, June; B. M. Heath 1 Joseph Fisher, NW NE NW 22-6s-12w, IP 32 bbl., Cypress, 2,253-57 ft., TD 2,261 ft.

FORD, NORTH—Posey, July; G. L. Reasor 1 Olus Justus, NE NE NE 15-6s-12w, IP 104 bbl., Cypress, 2,242-56 ft., TD 2,256 ft.

FRANKLIN, WEST—Posey, June; B. M. Heath 1-A J. Y. Welborn, SW NW NE 13-7s-12w, IP 30 bbl., Waltersburg, 1,804-11 ft., TD 1,815 ft.

McGARY—Gibson, August; George S. Engle 1 John S. Teel, SE SW NW 16-3s-11w, IP 122 bbl., Waltersburg, 1,685-88 ft., TD 1,702 ft.

MOUNTS—Gibson, July; C. E. Skiles 1 Columbus Smith, SW NW NW 13-3s-12w, IP 20 bbl., Waltersburg, 1,819-44 ft., TD 2,636 ft.

OWENSVILLE, EAST—Gibson, March; Superior Oil Co. 1 Levi Tucker, NW NW SW 4-3s-11w, IP 5 bbl. Benoist, 2,223-34 ft., TD 2,525 ft.

PARKER—Posey, July; S. D. Jarvis 1 W. P. Schweikhart, SW NE SW 1-6s-12w, IP 10 bbl., Tar Springs, 1,969-79 ft., TD 1,982 ft.

ROCHESTER—Gibson, June; Olen D. Sharp 1 Theresa Berry et al, NW SW NW 13-2s-13w, IP 842 bbl., Waltersburg, 1,916-56 ft., TD 2,759 ft.

SPENCER—Posey, November; Vic Gallagher et al 1 J. W. Spencer, NW SW NW 12-8s-14w, IP 1,137 bbl., McClosky, 2,854-64 ft., TD 2,975 ft.

SPRING HILL—Vigo, November; C. B. Mansfield 1 Sutliff, NW NW NW 14-11n-9w, IP 200 bbl., Devonian, 1,670-1,702 ft., TD 1,807 ft.

ST. JAMES—Gibson, June; Ernest Zink 1 Frances Maier, NW SW SE 12-4s-11w, IP 20 bbl., McClosky, 2,382-86 ft., TD 2,392 ft.

VIENNA, NORTH—Vanderburgh, March; H. L. Cokes 1 William Heneisen, SW SE NW 19-5s-11w, IP 150 bbl., Aux Vases, 2,618-29 ft., TD 2,775 ft.

VIENNA, SOUTH—Vanderburgh, August; Aurora Gasoline Co. 1 Albert Boeke, SE NE NE 6-6s-11w, IP 57 bbl., Aux Vases, 2,564-69 ft., TD 2,654 ft.

WALTON—Cass, October; Truman Drake 1 Ora Shaffer, SE NW NE 36-26n-2e, IP 16 bbl., Trenton, 1,004-08 ft., TD 1,008 ft.

WARRENTOWN—Gibson, November; George & Wrather and O. Ziliak, NE NE SE 18-4s-10w, IP 88 bbl., O'Hara, 2,259-65 ft., TD 2,351 ft.

WILFRED—Sullivan, August; F. B. Cline Cline 1 Harry Seipman, NE NE SW 30-9n-8w, IP 60 bbl., Devonian, 2,021-39 ft., TD 2,039 ft.

UNNAMED—Posey, November; Coy Oil Co. 1 Lynch, NW SE NE 26-7s-15w, IP 35 bbl., Cypress, 2,468-81 ft., TD 2,481 ft.

NEW PAYS

BELKNAP—Vanderburgh, February; George S. Engle 1 J. Jourdan, NW SE SE 18-6s-11w, IP 150 bbl., Pennsylvanian, 1,595-1,611 ft., TD 1,870 ft.

EVANSVILLE—Vanderburgh, October; Dickerson & Lamberknect 1 Ruben Bailey, NE NE NE 2-6s-11w, IP 135 bbl., McClosky, 2,405-13 ft., TD 2,416 ft.

McGARY—Gibson, September; Flamingo Oils, Inc., 3 John S. Teel, NW SW NW 16-3s-11w, IP 25 bbl., Benoist, 2,266-74 ft., TD 2,274 ft.

PARKER—Posey, October; A. J. Slagter 1 Charles Herrenbruck heirs, SE NE SW 2-6s-12w, IP 45 bbl., McClosky, 2,632-38 ft., TD 2,669 ft.

WESTERN KENTUCKY

NEW POOLS

BEACH GROVE—McLean, October; Ashland Oil & Refining Co. and Basin Drilling Co. et al 1 Sandefur, SW NE NW 7-N-26, IP 92 bbl., Aux Vases, 2,281-87 ft., and lower O'Hara, 2,311-18 ft., TD 2,319 ft.

CAIRO, NORTH—Henderson, May; Carter Oil Co. 1 A. E. Melton, NE SW NE 14-O-23, IP 110 bbl., Waltersburg, 1,753-65 ft., TD 2,710 ft.

DIXON—Webster, August; Ashland Oil & Refining Co. and F. T. Shelton 1 Mattie Ramsey, SE NE SW 21-M-22, IP 16 bbl., lower O'Hara, 3,040-47 ft., TD 3,053 ft.

EUTERPE, NORTH—Henderson, November; Ashland Oil & Refining Co. and Basin Drilling Co. 1 C. M. Crafton, NW SE SE 1-O-25, IP 50 bbl., Hardinsburg, 1,728-47 ft., TD 1,754 ft.

GUFFIE, EAST—Daviess, January; R. H. Compton 1 Worthington, 15-N-28, IP 70 bbl., McClosky, 1,883-87 ft., TD 1,989 ft.

GUSTON—Meade, February; George Baker et al 1 J. D. Tobin, NW SW SE 8-Q-40, IP 5 bbl., Osage, 467-76 ft., TD 476 ft.

MORGANFIELD, SOUTH—Union, March; Sun Oil Co. 1 Lillie Binford, SW NE SE 23-O-19, IP 14 bbl., Pennsylvanian, 1,406-19 ft., TD 1,419 ft.

NIAGRA, NEW—Henderson, June; Ashland Oil & Refining Co. 1 R. L. Holliday, NW NW NE 20-O-24, IP 36 bbl., lower O'Hara, 2,452-56 ft., TD 2,617 ft.

OWENSBORO, GAS—Daviess, October; S. B. Smith 1 fee, SW SW SW 14-P-29, IP 250,000 cu. ft. of gas, Pennsylvanian, 380-81-ft., TD 381 ft.

WYMAN—McLean, November, J. C. Miller and Ashland Oil & Refining Co. 1 J. D Bennett, NW SW SW 6-N-27, IP 240 bbl., Cypress, 1,965-93 ft., TD 1,994 ft.

NEW PAYS

GENEVA—Henderson, August; Wood and Lacy ,1 Wood fee, SW SE NE 20-Q-21, IP 61 bbl., McClosky, 2,598-2,602 ft., TD 2,620 ft.

MORGANFIELD, SOUTH—Union, July; The Texas Co. 1 W. C. Offutt, NE NE SE 23-O-19, IP 17 bbl., Hardinsburg, 2,062-98 ft., TD 2,744 ft.

MORGANFIELD, SOUTH—Union, June; Sun Oil Co. 1 W. A. and Nace Anderson, NE NW SE 23-O-19, IP 42 bbl., McClosky, 2,666-71 ft., TD 2,674 ft.

MORGANFIELD, SOUTH—Union, May; Sun Oil Co. 2 Lillie Binford, SW NE SE 23-O-19, IP 175 bbl., Waltersburg, 1,793-1,807 ft., TD 1,809 ft.

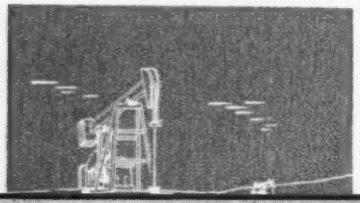
EASTERN KENTUCKY

NEW POOLS

BEE TREE—Magoffin, June; Dave Compton 1 Roosevelt Minnix, 6-N-78, Big Six, IP 10,000,000 cu. ft. of gas, TD 2,515 ft.

UNNAMED—Martin, July; Virginian Oil & Gas Co. 16 Park College, Wolf Creek (Maxon sand), 1,410-15 ft., IP 100 bbl., TD 1,415 ft.

ARTIFICIAL-LIFT SURVEY



18,410 Wells Slated to Go on Artificial Lift in 1949

REVIEW AND FORECAST

by Kenneth B. Barnes

THIS year, on the order of 18,410 wells will be put on artificial lift—sucker-rod pumping, hydraulic pumping, gas lift, plunger lift, electrical submersible pump installations, etc. The figure of 18,410 new artificial-lift installations has been obtained from company-to-company inquiries by The Oil and Gas Journal, to representative oil concerns operating in every oil producing state in the country. The large majority of the wells which will go on artificial lift in 1949 will be from the "new completion" list, but of course others that will be put on the pump for the first time will come from wells previously flowing, but completed last year, 2 years ago, 4 years ago, etc., with a few even from a decade or more back.

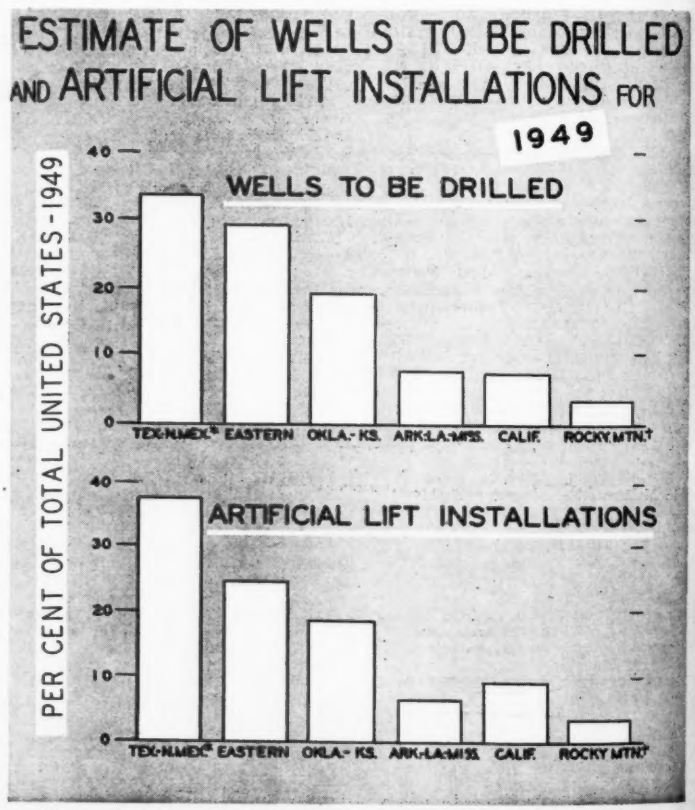
This 18,410-well estimate for the 1949 pumping wells has some very interesting significance from a statistical, actuarial, or trend standpoint, however the aspect might be called. Does the figure mean that the United States is becoming more rapidly an oil-producing industry composed almost entirely of pumping wells? If this question is put on the basis of a ratio of number of total pumping wells to total producing wells, an affirmative answer has prevailed for many years. That is to say, on total well numbers the United States has been and will remain very substantially in the "pumping" category. About 90 per cent of the total producing wells now are being operated on some form of artificial lift.

For every oil well to be drilled in the United States in 1949, the data compiled for this pumping survey indicate there will be about 1.8 completions, including wildcats, development wells, input wells, gassers, and dry holes. The ratio of new producing wells to wells placed on pump is estimated (average of all states) to be 1.1 to 1.

As shown in the accompanying table and chart, 6,718 wells is by far the largest number expected to go on pump in one state—Texas. Over 12,000 wells will be drilled in Texas in 1949 with about 62 per cent expected to be producers. Texas will have 32 per cent of all wells drilled, and will have 36 per cent of all wells placed on artificial lift.

ARTIFICIAL LIFT SURVEY, 1949

	Estimates for 1949	
	To be drilled	Artificial lift
Arkansas	224	123
California	2,607	1,775
Colorado	142	90
Illinois	2,503	1,306
Indiana	1,000	480
Kansas	3,527	1,656
Kentucky	1,103	398
Louisiana	2,041	863
Michigan	1,180	425
Mississippi	407	177
Montana	371	165
New Mexico	569	202
New York	885	443
Ohio	1,120	314
Oklahoma	3,825	1,785
Pennsylvania	2,225	1,000
Texas	12,042	6,718
West Virginia	895	134
Wyoming	675	339
Miscellaneous	184	19
Total U. S.	37,550	18,410



*Eastern incl. N. Y., Pa., W. Va., Ohio, Mich., Ind., Ill., Ky. †Rocky Mtn. incl. Mont., Wyo., Colo.

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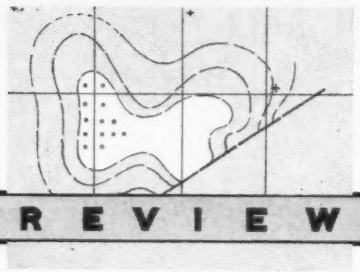
GEOPHYSICAL COMPANY
HOUSTON

NEW RESERVES



Discoveries, New Pays in 1948 —Their Size and Location

REVIEW AND FORECAST

TEXAS GULF COAST
(District 2)

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
Anaqua, Victoria; 5,527 ft.	40	6	80
Charco, Goliad; Yegua	40	5	80
Cottonwood Creek, DeWitt; Massive sand	160	20	320
East Floresville, Wilson; Midway	40	12	80
Holly, DeWitt; Wilcox	320	11	1,000
Holzmark-Wilcox, Bee; Wilcox	160	10	320
LaBahia, Goliad; 5,548 ft.	40	13	80
Long Mott, East, Calhoun; 7,268 ft.	200	5	600
Marshall, Goliad; Luling	160	15	160
Reklaw (Hart), Wilson; Reklaw sand	40	2	80
Sandy Creek, Jackson; 4,560 ft.	240	7	700
South Blanconia, Bee; Vicksburg	120	10	240
Total	1,560		3,740

New Pays

Boyce, Goliad; Pettus sand	40	5	80
Brandt, Goliad; Mackhank & Pettus sands (2)	240	20	720
Chapa, Live Oak; lower Wilcox	160	20	160
Francitas, Jackson; upper Kopnicky sand	80	15	160
Ganado Deep, Jackson; 6,426 ft.	40	5	80
Gottschalt, Goliad; Massive Wilcox	80	6	160
Harris, Live Oak; Wilcox	160	20	160
Hord's Creek, Goliad; 4,919 ft. and Cook Mountain (2)	80	14	160
Lolita-Deep, Jackson; 7,556 ft.	80	8	160
Long Mott, Calhoun; 9,634 ft.	160	18	160
Long Mott, East, Calhoun; 7,183 ft.	160	14	160
North LaRosa, Refugio; 5,616 ft.	160	7	160
Pridham Lake, West, Victoria; 4,342 ft.	40	3	50
Refugio-Fox, Refugio; 6,397 ft.	40	14	80
Total	1,520		2,450

TEXAS GULF COAST
(District 3)

Discoveries

Allen, Wharton; lower Frio	80	4	200
Arch, Matagorda; Frio	40	8	160
Bailey's Prairie, Brazoria; 10,854 ft.	80	26	160
Buna, Jasper; 7,459 ft.	80	10	150
Clinton, East flank, Harris; 6,540 ft.	40	10	80
Cotton, North, Liberty; 7,908 ft.	160	18	160
Day, Madison; Wilcox	40	5	80
Dayton, South, Liberty; 8,562 ft.	80	38	160
Durkee area, Harris; 7,696 ft.	160	14	160
Egypt-Deep, Wharton; Discorbis Yegua	160	26	160
Glendale, Northwest, Trinity; Washita lime	160	40	160
Hildebrandts Bayou, Jefferson; 7,750 ft.	160	10	320
Hillister, East, Tyler; 8,260 ft.	160	10	160
Kuhlman, Harris; 5,875 ft.	40	4	50
Lane City Townsite, Wharton; 5,464 ft.	120	14	240
Louise, West, Wharton; 4,075 ft.	40	5	50
Orange, North, Orange; lower Frio	80	5	240
Rankin, Harris; 8,252 ft.	160	3	320
Tanglewood, Lee; Edwards lime	80	9	160
Votaw, Liberty; 5,687 ft.	40	5	50
Total	1,960		3,220

New Pays

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.
Beech Creek, Hardin; 6,720 ft.	40	10	
Beech Creek, East, Hardin; 6,653, 6,710 (2 sands)	80	8	
Beech Creek, North, Hardin, 6,199 ft.	40	12	
Boling, Fort Bend; Frio	40	10	
Day, Madison; 2,371 ft.	40	2	
Fannett, Jefferson; 11,045 ft.	160	8	
Gist, Newton; Hackberry	80	6	
Glasscock, Colorado; Wilcox	80	40	
Hankamer, Liberty; 1,996 ft.	40	14	
Hockley, Harris; 3,063 ft.	40	6	
Humble, Harris; 3,146 ft.	40	15	
Jergins, Chambers; Marginulina	40	10	
Lucky, Matagorda; 8,558 ft.	80	12	
Manvel, Brazoria; 5,786	40	6	
Midfield, Northwest, Matagorda; 6,242 ft.	40	5	
North Delhi, Harris; 7,050 and 7,274 ft.	160	17	
North Port Neches, Orange; 8,420 and 8,980 ft. (2 sands)	320	30	
Sabine Tram, Newton; 7,366 and 7,785 ft. (2 sands)	160	8	
Saratoga, Hardin; Cook Mountain	40	36	
South Gillock, Galveston; 8,956 ft. tain (4) MBM	80	10	
South Liberty, Liberty; 6,111, 4,430, 7,533 ft. and Cook Mountain (4)	280	31	
South Mayes, Chambers; lower Frio	160	5	
South Pierce Junction, Harris; 7,358 ft.	80	9	
West Columbia, Chambers; 5,542 and 6,676 ft. (2)	80	20	
West Conroe, Montgomery; 4,594 ft.	40	10	
Total	2,280		3,640

SOUTHWEST TEXAS
(District 1)

Discoveries

Gause, Milam; Edwards lime	40	7	80
Jim Smith, Bastrop; 1,608 ft.	80	29	100
Kelly, Caldwell; Austin chalk	80	40	160
Poteet, Atascosa; 3,562 ft. Anacacho lime	40	30	80
San Miguel Creek, McMullen; 5,421 ft.	40	4	80
Seguin, Guadalupe; Buda lime	80	15	100
Total	360		660

New Pay

Jourdanton, Atascosa; 7,155 ft.	80	9	160
Total	80		160

SOUTHWEST TEXAS
(District 4)

Discoveries

Armstrong, South, Jim Hogg; Loma Novia	120	6	240
Arrowhead, Hidalgo; 5,940 ft.	200	2	600
Bandera, North, Jim Wells; Jackson sand	40	12	50
Borosa, Starr; 4,297 ft.	80	6	100
Borregas, West, Kleberg; 5,960 ft.	40	14	160

SOUTHWEST TEXAS (Continued)

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
Catarina, Dimmit; Navarro	40	5	40
Charamousca, North, Duval; 2,064 ft.	40	3	50
Coastal, Starr; 5,750 ft.	160	15	320
Copano Bay, Aransas; Frio	80	8	400
Corpus Christi Bay, Nueces; 10,675 ft.	160	13	160
Corpus Christi, West, Nueces; Basal Frio	80	50	400
D.C.R. 79, Duval; Cole	80	3	160
El Mesquite (Oil), Duval; 3,020 ft.	40	8	50
El Panal, Starr; 4,671 ft.	40	8	50
Fitzsimmons, North, Brooks; 4,497 ft.	40	7	50
Hagist, Duval; 7,044 ft. (C)	160	20	160
Lamar, Aransas; 7,286 ft.	160	10	320
Lovia, Duval; 2,667 ft.	80	12	160
Pantex, Duval; 2,593 ft.	280	11	800
Payne, Hidalgo; 7,562 ft.	80	4	100
Poquita Creek, Duval; 2,512 ft.	200	10	400
Quien Sabe (oil), Webb; 2,347 ft.	880	14	2,000
Salt Lake, Aransas; 7,209 ft.	40	5	40
San Pablo, Jim Hogg; 3,875 ft.	1,160	10	3,000
Semmes, Starr; 2,466 ft.	40	3	40
Sun, West, Starr; 8,833 ft.	80	25	100
Vaello, Duval; Woodley sand	80	7	100
Total	4,480		10,050

New Pays

Cage Ranch, Brooks; 7,800 ft.	160	20	160
East White Point, San Patricio; 3,337 ft.	40	4	80
Farenthold, Nueces; 5,604 and 6,107 ft. (2)	80	11	160
Flour Bluff, Nueces; 9,675 ft.	160	15	160
Jay Simmons, Starr; 6,123 ft.	40	9	80
Kennard, Starr; 3,903 and 4,028 (2)	80	20	160
La Gloria, Brooks and Jim Wells; 7,563 (Frio)	80	7	400
Morgan, San Patricio; 6,788 ft.	40	10	80
Premont, Jim Wells; 3,430 ft.	40	10	80
Premont, East, Jim Wells; 4,843 ft., and 3,710 (McCartney sd.) (2)	80	14	160
South Longhorn, Duval; 4,233 ft., 4,180 ft. and 5,780 ft. (Cockfield) (3)	120	13	360
Squire, Duval; Pettus	80	3	240
West Sinton, San Patricio; 1,295 ft.	40	7	40
Total	1,040		2,160

EAST TEXAS

(Districts 5 and 6)

Discoveries

Alba, Wood; sub-Clarksville	280	95	600
Gossett, Kaufman; Rodessa	40	4	120
Lindale, Smith; Rodessa	160	60	160
Mitchell Creek, Hopkins; Paluxy	200	6	....
Patroon, Shelby; Glen Rose	40	42	120
Weches, Houston; Woodbine	40	(?)	150
Unnamed, Grayson; unidentified	120	10	350
Unnamed, Grayson; unidentified	40	37	80
Unnamed, Smith; Paluxy	40	36	120
Total	960		1,700

New Pays

Blackfoot, Anderson; Rodessa	280	20	1,000
Chapel Hill, Smith; Paluxy	80	21	400
Coke, Wood; sub-Clarksville	1,040	58	5,000
Yantis, Wood; Eagleford	40	11	100
Total	1,440		6,500

NORTH AND WEST CENTRAL TEXAS

(Districts 7-B and 9)

Discoveries

Akens, Jones; Hope	40	5	60
Allar, Young; Caddo	80	3	120
Anson, Jones; Canyon sand	80	14	120
Archer County Regular, Archer; sand	40	7	60
Archer County Regular, Archer; Strawn	160	28	320
Bartlett, Jones; Swastika	40	12	60
Brown County Regular, Brown; Marble Falls	120	20	300
Burns-Jones, Archer; Strawn	600	10	2,500
Chico, Wise; conglomerate	640	122	3,200
Chico West, Wise; conglomerate	120	16	400
Gibson, Taylor, Flippen	80	8	120
Grace, Clay; Caddo	120	50	500
Hammon, Wichita; unidentified	40	11	60
Kirk, Comanche; Marble Falls	400	21	1,500
Kleiner, Eastland; Mississippi	200	14	2,000
Lake Wichita Caddo, Wichita; Caddo	40	14	60
McCaulley West, Fisher; Noodle Creek	40	16	60
McKeichan, Throckmorton; Mississippi	120	30	360
Mallard, Montague; conglomerate	40	10	60
Marrs, Throckmorton; Marble Falls	80	10	160
Miller, Montague; conglomerate	120	16	360
Milliorn, Callahan; sand	40	8	60
Morrissett, Callahan; sand	40	7	60
Odell West, Wilbarger; Palo Pinto	40	34	60
Queens Peak, Montague; Caddo	120	8	400
Refinery, Wichita; conglomerate	80	6	120
Reidenbach, Taylor; Cook	40	5	60
Stamford, Haskell; King	40	9	60
Throckmorton County Regular, Throckmorton; Caddo	80	12	120
Throckmorton County Regular, Throckmorton; Caddo	40	15	60
Wright, Throckmorton; Mississippi	40	35	80
32 Unnamed, various counties	1,760		500
Total	5,520		13,960

New Pays

Acme, Clay; Simpson (?)	160	40	320
Gibson, Taylor; Dotham sand	40	7	60
Total	200		380

WEST TEXAS

(Districts 7-C and 8)

Discoveries

Addis, Ector; Strawn	80	19	240
Arick, Hale; Canyon	320	60	1,280
Arledge, Coke; Marble Falls	320	19	1,920
Benedum, Upton; Ellenburger	240	100	1,920
Brown, Gaines; Glorietta	120	100	360
C-Bar, Crane; Silurian	40	10	320
Chapman, Reeves; Delaware	40	11	160
Cosby-Bectel, Reeves; sand	80	71	320
Dermott, Scurry; Pennsylvanian	80	152	320
Dixieland, Reeves; Delaware	40	32	160
Freeman, Runnels; Pennsylvanian	40	15	120
Green, Tom Green; Strawn	40	30	120
Jenkins, Gaines; Devonian	40	35	320
Keystone, South, Winkler; Permian	120	120	360
Marvin, Sterling; Wichita, Albany	120	53	360
Millican, Coke; Strawn	40	16	240
Orient, Pecos; Permian	240	25	480
Petersburg, West, Hale; Cisco	80	79	240
Russell, North, Gaines; Devonian	40	25	320
San Benito, Coke; Marble Falls	40	7	240
Schattell, Scurry; Canyon	40	75	240
Seminole, West, Gaines; San Andres	120	161	600
Shafter Lake, Andrews; Clear Fork	40	40	160
Spade, Hockley; Glorietta	80	139	350
Vealmoor, Howard; Pennsylvanian	280	40	1,400
Tennyson, West, Coke; Ellenburger	40	37	120
West Parker, Andrews; Devonian	80	30	640
Wilshire, Upton; Wolfcamp	40	105	150
Unnamed, Andrews; Permian	40	33	160
Unnamed, Andrews; Clear Fork	40	36	120
Unnamed, Cochran; San Andres	40	88	160
Unnamed, Cochran; San Andres	40	111	160
Unnamed, Cochran	40	40	120
Unnamed, Coke; Palo Pinto	120	9	360
Unnamed, Crane; Waddell sand	40	6	200
Unnamed, Hockley; Glorietta	40	(?)	120
Unnamed, Sterling; Ellenburger	40	30	120
Total	3,320		14,980

New Pays

Beddo, Runnels; Pennsylvanian	40	11	120
Benedum, Upton; Pennsylvanian	80	100	640
Benedum, Upton; Silurian	40	154	320
Block 47, Crockett; Silurian	120	90	500
Fullerton, Andrews; Wichita, Albany	80	35	400
Jordan, Ector; Tubb	240	20	1,200
Shafter Lake, Andrews; Ellenburger	40	65	400
Total	640		3,580

SOUTHEAST NEW MEXICO

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
Cross Roads, Lea; Devonian	40	100	200
Unnamed, Lea; San Andres	40	50	80
Unnamed, Lea; Drinkard	160	(?)	320
Unnamed, Lea; McKee sand	160	166	480
Unnamed, Lea; Seven Rivers	80	3	160
Unnamed, Lea; McKee sand	80	85	240
Unnamed, Eddy; sand	40	37	60
Total	600		1,540

New Pay

Penrose-Skelly, Lea; Montoya	80	10	160
Total	80		160

NORTH LOUISIANA

Discoveries

Field and parish; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
Driscoll, Bienville; Pettit	40	60	80
Gorum, Natchitoches; Wilcox	40	3	80
Saline Bayou, Catahoula; Wilcox	240	6	720
Truxno, Union; Nacatoch	400	6	800
Total	720		1,680

New Pays

Ada, Bienville; Pettit	160	15	320
East Haynesville, Claiborne; Smackover	40	10	80
Shongaloo, Webster; Cotton Valley	40	18	80
Total	240		480

SOUTH LOUISIANA

Discoveries

Bay Junop, Terrebonne; 4,012-20 ft.	40	8	200
Bell City Area, Calcasieu; 10,736-750 ft.	160	14	160
Block 69 (Main Pass), Plaquemines; 5,848-57 ft.	40	9	250
Block 71, Vermilion; 9,608-18 ft.	80	10	80
Caney Creek, Beauregard; 8,177-82 ft.	80	5	320
East Moss Lake Area, Calcasieu; 8,568 ft.	80	6	320
Holly Beach, Cameron; 10-817-822 ft.	160	5	80
Hurricane Creek, Beauregard; Cockfield	360	5	1,800
Lake Hatch, Terrebonne; 7,896-7,902 ft.	80	6	320
Little Lake, Jefferson; 9,889-94 ft.	160	5	160
Marksville, Avoyelles; Wilcox	40	6	150
Melville, St. Landry; 11,240 ft.	160	5	160
North Gordon, Beauregard; 8,458-63 ft.	320	5	320
Pointe a la Hache, Plaquemines; 10,196-207 ft.	160	11	160
South Bancroft, Beauregard; 10,242-252 ft.	80	10	320
Sunshine, Iberville; 10,310-315 ft.	80	5	320
West Bivens, Beauregard; Wilcox, 9,328 ft.	80	6	320
Block 16, Grand Isle area, Jefferson; 4,584-96 ft.	40	12	250
Block 45, Eugene Island area, Iberia; 11,351-58 ft.	40	7	250
Total	2,240		5,940

New Pays

Bancroft, Beauregard; Eocene	80	5	160
Barataria, South, Jefferson; Miocene	160	20	160
Bay de Chene, Lafourche (3 sands), 10,768 and 3,696, 6,862	120	36	500
Bayou Couba, St. Charles; 3,799-3,803 ft.	40	4	100
Block 32, Terrebonne; (2 sands) 1,758 and 2,808 ft.	80	24	750
Bully Camp, Lafourche; 7,788 ft.	80	10	250
Dave Haas, Avoyelles; Sparta	80	22	320
Delta Farms, Lafourche; 6,908 and 11,811 (2 sands)	80	14	250
Edgerly, Calcasieu; 4,104 ft.	40	31	150
Four Isle Dome, Terrebonne; 12,210-220 ft.	80	10	240
Good Hope, St. Charles; 7,750 ft.	40	22	150
Gordon, North, Beauregard; Cockfield	80	10	240
Holmwood, Calcasieu; 10,820-840 ft.	160	20	160
Horseshoe Bayou, St. Mary; 11,994 ft.	80	10	320
Iota, Acadia; 8,666 ft.	80	32	240
Lake Mongoulois, St. Martin; 10,-968 ft.	80	35	320
Leeville, Lafourche; Miocene	80	5	320
Moss Lake, Calcasieu; 8,613 ft.	160	8	160
Napoleonville, Assumption; 9,845 ft.	80	11	300
Pecan Lake, Cameron; 10,488-505 ft.	160	17	160
Plumb Bob, St. Martin; 9,964 ft.	80	14	300
Point a la Hache, Plaquemines; 10,-142 ft.	160	8	160
St. Gabriel, Iberville; 11,015 ft.	160	20	160
St. Martinville, St. Martin; Miocene (2 sands)	80	26	200
South Crowley, Acadia; 8,144 ft.	80	12	200
South Jeanerette, St. Mary; 6,524 ft.	40	10	120
Valentine, Lafourche; 11,036 ft.	160	25	160
Week's Island, Iberia; 7,968 ft. and 14,243 ft.	80	20	400
West Cote Blanche Bay, St. Mary; 1,924, 2,364, and 6,553 (3 sands)	120	27	500
Total	2,800		7,450

ARKANSAS

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
Cairo, Union; Smackover	280	9	1,000
College Hill, Columbia; Smackover	40	3	100
Felsenthal, Ashley; Cotton Valley	40	6	100
Unnamed, Calhoun; Meakin sand	40	15	100
Unnamed, Union; Smackover	40	5	100
Total	440		1,400

MISSISSIPPI

Discoveries

East Yellow Creek, Wayne; 4,845 ft. Eutaw	40	10	120
Ovett, Jones; Comanche	80	15	200
Roxie area, Franklin; 10,578 ft.	160	7	320
Sandy Hook, Marion; lower Tuscaloosa	160	10	480
South La Grange, Adams; Wilcox	40	8	130
Total	480		1,250

CALIFORNIA

Discoveries

Alma, Kern; Vedder	320	15	600
Ciervo, San Benito; Eocene	60	80	75
Coal Oil Point, Santa Barbara; Vaqueros	40	27	300
Dominguez Southeast, Los Angeles; "5" (Pliocene) and "7" (Miocene)	160	254	750
East Gosford, Kern; Stevens	40	15	125
Guijarral Hills, Fresno; Leda	100	82	650
Guadalupe, San Luis Obispo; Foxen	40	76	100
Petaluma, Sonoma; Petaluma	60	30	75
Placerita Canyon, Los Angeles; Saugus	240	134	300
Russell Ranch, Santa Barbara; Vaqueros	100	384	3,500
San Emigdio, Kern; Vaqueros	40	62	100
Section "20," Kern; Vedder	80	21	150
Tejon Hills, Kern; Santa Margarita	160	28	175
Walnut, Los Angeles; Unknown	40	(?)	75
Whiterock, San Luis Obispo; Temblor	40	40	150
Total	1,520		7,125

New Pays

Cat Canyon West, Santa Barbara; "86-21" (Miocene)	40	356	125
Coles Levee North, Kern; "68-29" (Stevens)	40	232	175
Del Valle West, Los Angeles; Vasquez "14" and Del Valle	80	145	200
Midway-Sunset, Kern; Pentland	80	172	250
Newhall-Potrero, Los Angeles; "7" Zone	40	155	350
San Ardo, Monterey; Campbell	750	74	2,000
San Ardo, Monterey; Biaggi	40	19	75
Wheeler Ridge, Kern; Coal Oil Canyon	160	(?)	450
Whiterock, San Luis Obispo; Vaqueros	425	228	17,000
Total	1,655		20,625

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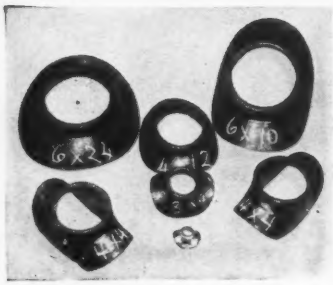

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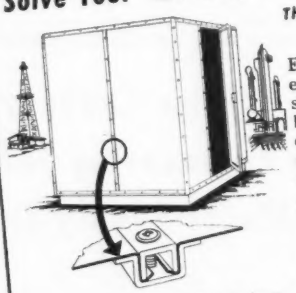

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MONTANA

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
Ragged Point, Musselshell; Kibbey	40	77	200
Big Wall, Musselshell; Kibbey	40	7	10
Melstone, Musselshell; Kibbey	160	44	1,600
Womans Pocket, Golden Valley; Amsden	10	99	100
Total	250		1,910

New Pays

Big Wall, Musselshell; lower Amsden	200	12	2,000
Northwest Elk Basin, Park; Lakota	40	36	400
Total	240		2,400

WYOMING

Discoveries

Adon, Campbell; Minnelusa	40	12	200
Bridge Creek, Niobrara; Dakota	40	36	200
Fiddler Creek, Weston; Newcastle	80	50	250
Franks Fork, Park; Phosphoria	40	10*	10
Kuemmerle, Weston; Dakota	10	15	10
Little Laramie, Albany; Tensleep	160	15	1,600
Sage Creek, Big Horn; Madison	20	315	100
Silver Tip, Park; Phosphoria	300	62	2,700
Skull Creek, Weston; Newcastle (lenticular)	600	20	2,100
South Cole Creek, Converse; Lakota	40	35	400
Taylor Sussex, Johnson; Lakota	40	29	400
West Poison Spider, Natrona; Frontier	80	120	1,500
Wildhorse Butte, Hot Springs; Phosphoria	10	60	50
Total	1,460		9,520

New Pays

East Allen Lake, Carbon; Tensleep	10	49	50
Fourbear, Park; Madison	10	232	50
Hamilton Dome, Hot Springs; Madison	160	174	800
Hatfield, Carbon; Sundance	50	50	250
Little Buck Creek, Niobrara; Converse	40	38	200
Lost Soldier, Sweetwater; Cambrian	80	812	800
Lost Soldier, Sweetwater; Madison	120	303	1,200
Medicine Bow, Carbon; Tensleep	20	200	300
Pitchfork, Park; Madison	80	136	100
Silver Tip, Park; Frontier	500	65	2,500
South Steamboat, Fremont; Phosphoria	100	47	500
West Poison Spider, Natrona; Mesa Verde	80	40	800
Torchlight, Big Horn, Madison	120	310	1,200
Wertz, Carbon & Sweetwater; Madison	80	442	800
Wertz, Carbon & Sweetwater, Cambrian	20	112	200
Total	1,470		9,750

UTAH

Discoveries

Ashley Valley, Uinta; Weber	160	16	2,400
Total	160		2,400

New Pay

Boundary Butte, San Juan; Coconino	10	24	100
Total	10		100

COLORADO

Discoveries

Dove Creek, Montezuma; Paradox	40	24	400
Total	40		400

New Pay

Maudlin Gulch, Moffat; Sundance	40	18	200
Total	40		200

OKLAHOMA

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
Alabama, SW., Hughes; Union Valley	440	13	1,000
Asher, SE., Pottawatomie; Wanette	40	10	50
Avoca, SW., Pottawatomie; Viola	160	36	300
Banner, W., Kay; Burbank	80	60	200
Bebee, E., Pontotoc; Viola	80	80	100
Bradley, NE., Grady; 3rd Bromide sand	40	113	160
Bray, SE., Stephens; Springer	40	39	160
Byars, E., McClain; Viola	120	34	180
Cement, E., Grady; Fortuna sand	480	22	2,500
Cement, No., Caddo; Marchand sand	40	25	120
Ceres, SW., Noble; Bartlesville	320	45	800
Davenport, SE., Lincoln; Prue	80	85	80
Denver, SE., Cleveland; Earlsboro	80	50	100
Dover, SW., Kingfisher; dolomite	160	75	160
Erin Springs, SE., Garvin; Penn. sand	80	37	320
Elk City, Beckham; Penn sand (granite wash)	160	100	160
Evansville, E., Logan; Bartlesville	480	10	1,200
Foster, No., Garvin; 4th Deese sand	40	39	160
Ft. Sill, NW., Comanche; sand	80	8	100
Garden Grove, No., Okfuskee; Hunton	40	27	60
Haydenville, So., Okfuskee; Cromwell	280	16	400
Hoover, No., Garvin; 2nd Deese sand	40	10	160
Ingalls, SW., Payne; Prue	40	6	100
Jennings, SW., Creek; Skinner	80	43	100
Johnsonville, McClain; Viola	40	26	100
Katie, SE., Garvin; Hoxbar	160	81	160
Keokuk, West., Seminole, Misener	40	10	50
Maramec, E., Pawnee; Tucker	40	21	50
Maysville, SE., Garvin; 1st Bromide sand	40	9	120
Meeker, SW., Lincoln; unconformity	40	7	40
Mehan, So., Payne; Bartlesville	80	6	200
Morse, NE., Okfuskee, Gilcrease	40	12	60
Munger, SE., Oklahoma; Hunton	160	35	160
Nash, E., Grant; Oswego	160	76	160
Navina, NE., Logan; Red Fork	80	12	80
Newcastle, E., McClain; Chimney Hill-Hunton	80	35	240
Newcastle, SE., Cleveland, Hunton	440	46	1,500
Panther Creek, SW., Garvin; 4th Deese sand	80	60	320
Ramsey, SE., Payne; Skinner	80	10	80
Ringling, No., Jefferson; sand	120	55	120
Sandy Creek, Murray; basal Oil Creek	40	15	120
Short Junction, W., Cleveland; Bois d'Arc and Chimney Hill	40	40	120
Sporn, NE., Payne; Red Fork	160	5	160
Unnamed, Beckham; Penn. granite wash	160	13	160
Unnamed, Garvin; 2nd Deese sand	40	30	160
Unnamed, Garvin; sand	160	18	160
Unnamed, McClain; Hunton	40	49	120
Unnamed, Okfuskee; Gilcrease	40	36	60
Wanette, SW., Pottawatomie; Trenton-Viola	80	8	80
Washington, No., McClain; 1st Bromide sand	160	2	160
Webb, No., Grant; Wilcox	160	8	800
Total	6,240		14,210

KANSAS

Discoveries

Barry, West, Rooks; Arbuckle	960	2	2,980
Berland, Rooks; Arbuckle	640	5	1,920
Chandler, Rooks; Arbuckle	640	7	1,920
De Geer, Barber; Viola	640	4	1,920
Fairview, Sedgwick; Mississippian	320	1	640
Hufford, Stafford; Arbuckle	640	15	1,920
Jelinek, Rooks; Arbuckle	640	12	1,920
Madden (Revived), Ellis; Lansing	240	5	600
Ney, Russell; Lansing	640	10	1,000
Northampton, Rooks; Arbuckle	960	11	2,800
Rolling Green, Barton; Lansing	640	6	950
Towanda, Butler; Viola	640	1	950
Twin Mounds, McPherson; Mississippian	640	6	800
Welch, West, Rice; Mississippian	160	9	300
Albion, Reno; Mississippian	120	5	240
Battle Hill, No., McPherson, Mississippian	160	15	300

KANSAS (Continued)

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
Bowman, No., Rice; Arbuckle	80	5	160
Box, Cowley; Mississippian	160	12	200
Bryant, Barton; Arbuckle	160	23	320
Canyons, Ellis; Lansing	160	6	250
Chambers, Sedgwick; Mississippian	80	10	80
Combs, NE., Butler; Bartlesville	320	25	1,000
Corbin (Revived), Sumner; Simpson	40	6	80
Dillner, NW., Russell; Arbuckle	160	11	400
Elrod (Revived), Cowley; Layton	40	36	40
Enterprise, Cowley; Bartlesville	160	41	450
Excel, Kiowa; Mississippian	40	28	40
Frisbie, NE., Pratt; Lansing	160	12	200
Garfield, Pawnee; Kinderhook	80	17	100
Gemeinhardt, Rice; Arbuckle	80	4	160
Gra-Rooks, Rooks; Arbuckle	160	3	400
Guyot, Butler; Bartlesville	40	8	60
Hiss, SE., Barton; Arbuckle	40	15	80
Homestead, Barton; Arbuckle	120	9	300
Hunter, No., Saline; Mississippian	40	16	40
Kelly, Stafford; Arbuckle	80	5	160
Kismet, Seward; Lansing	40	4	60
Lake Barton, Barton; Arbuckle	80	17	160
Laudick, Barton; Arbuckle	480	10	1,500
Lone Star, Rooks; Arbuckle	40	16	80
McHale, Rooks; Arbuckle	120	5	350
Marc, Rooks; Lansing	40	5	50
Maxwell, McPherson; Lansing	80	25	100
Nellie, Stafford; Lansing	80	8	100
Neola (Revived), Stafford; Viola	80	3	80
Nettie, Rooks; Lansing	40	7	50
Polifka, Ellis; Arbuckle	40	31	80
Prosper (Revived), Rice; Arbuckle	40	9	60
Strahm, Nemaha; Hunton	40	2	40
Syms, E., Stafford, Arbuckle	80	9	160
Weigle, Ellis; Lansing	40	8	50
White Cotton, Sedgwick; Burgess	80	4	100
Yeakley, Barton; Arbuckle	160	7	480
Unnamed, Greenwood; Mississippian	40	18	40
Unnamed, Rooks; Lansing	40	11	40
Total	12,520		29,160

New Pays

Kowalsky, Barton; Lansing	80	3	100
Ryan, Rush; Dodge and Lansing	40	44 (dual)	40
Total	120		140

MICHIGAN

Discoveries

Eden, Mason; Traverse	160	5	350
Heath (Revived), Allegan; Traverse	200	4	200
Holton, Muskegon; Traverse	40	2	40
Hopkins, South, Allegan; Traverse	200	2	500
Isabella, Isabella; Dundee	40	6	40
Lebanon, Clinton; Traverse	40	1	40
Niles, Berrien; Traverse	120	1	180
Pentwater, Oceana; Dundee	1,280	5	4,000
Standish, Arenac; Richfield	60	3	120
Sterling, Arenac; Dundee	720	4	720
Sylvan, Osceola; Dundee	120	8	120
Miscellaneous	200	4	100
Total	3,180		6,410

New Pays

Eden, Mason; Monroe	40	6	20
Sterling, Arenac; Traverse	40	5	20
Total	80		40

ILLINOIS

Discoveries

Akin, West, Franklin; O'Hara and Rosiclare	40	40	40
Assumption, Christian; Devonian	40	31	40
Clay City, North, Clay; McClosky and Rosiclare	360	12	720
Divide, South, Jefferson; McClosky	120	3	240
Evers, Effingham; McClosky	40	17	50
Evers, South, Effingham; Rosiclare	40	9	50
Goldengate, West, Wayne; Aux Vases	40	15	50
Herald, North, White; Aux Vases	40	8	80
Lancaster, North, Lawrence; Bethel	40	16	40
Livingston, Madison; Pennsylvanian	160	7	350
Maud, Central, Wabash; Bethel	280	10	400
Maud, West, Wabash; Cypress	280	6	400
Mayberry, North, Wayne; McClosky	40	2	80
Mills Prairie, Edwards; lower O'Hara	40	5	50
Parkersburg, So., Edwards; Bethel	40	8	50
Passport, South, Richland; Cypress	40	16	50
Rochester, Wabash; Waltersburg	160	18	400
Russell, Clay; Rosiclare	40	13	50
Sailor Springs, Central, Clay; Rosiclare	40	4	20
Sailor Springs, North, Clay; Rosiclare	40	5	40
Sailor Springs, West, Clay; Cypress	280	9	400
Shawneetown, No., Gallatin; McClosky	40	9	50
Stringtown, East, Richland; McClosky	40	4	50
Sumpter, South, White; Waltersburg	40	10	60
Unnamed, Edgar; Pennsylvanian	40	6	50
Unnamed, Christian; Trenton	80	59	150
Total	2,440		3,930

New Pays

Aden Consolidated, Wayne; Salem lime	40	16	50
Belle Prairie, Hamilton; Aux Vases	40	5	40
Bone Gap, South, Edwards; lower O'Hara	40	5	50
Clay City, North, Clay; Cypress	80	9	160
Crossville, White; Bethel	40	8	40
Divide, East, Jefferson; Rosiclare	80	3	100
Divide, East, Jefferson; McClosky	320	22	640
Grayville, West, White; Paint Creek	40	16	60
Grayville, West, White; Biehl	350	9	700
Inman, West, Gallatin; O'Hara and Tar Springs	40	26	40
Johnson, North, Clark; Devonian	40	10	40
Maud, Wabash; lower O'Hara	40	18	50
Maud, Wabash; Biehl	40	12	50
McKinley, Washington; Silurian lime	320	64	750
Mt. Carmel, West, Wabash; lower O'Hara	40	8	50
Mt. Carmel, West, Wabash; Cypress	160	8	320
Omaha, Gallatin; Biehl	80	21	120
Passport, South, Richland; Rosiclare	40	6	50
Rochester, Wabash; Pennsylvanian	200	22	400
Sailor Springs, West, Clay; Rosiclare	40	2	30
Shattuc, Clinton; Trenton	40	40	70
Whittington, Franklin; Hardinsburg	40	10	50
Whittington, West, Franklin; lower O'Hara	80	6	100
Total	2,270		3,960

INDIANA

Discoveries

Cypress, Vanderburgh; McClosky	40	3	40
Darmstadt, Vanderburgh; McClosky	40	6	50
Ford, Posey; Cypress	40	4	50
Ford, North, Posey; Cypress	160	14	250
Franklin, West, Posey; Waltersburg	40	7	50
McGary, Gibson; Waltersburg	120	3	200
Mounts, Gibson; Waltersburg	320	25	600
Owensville, East, Gibson; Benoist	40	11	50
Parker, Posey; Tar Springs	40	10	50
Rochester, Gibson; Waltersburg	350	40	1,500
Spencer, Posey; McClosky	80	10	170
Spring Hill, Vigo; Devonian	240	32	500
St. James, Gibson; McClosky	40	4	50
Vienna, North, Vanderburgh; Aux Vases	80	11	150
Vienna, South, Vanderburgh, Aux Vases	40	4	50
Walton, Cass; Trenton	40	4	50
Warrentown, Gibson; O'Hara	40	6	50
Wilfred, Sullivan; Devonian	360	18	1,000
Unnamed, Posey; Cypress	80	21	100
Total	2,190		4,960

New Pays

Belknap, Vanderburgh; Pennsylvanian	80	16	150
Evansville, Vanderburgh; McClosky	40	8	50
McGary, Gibson; Benoist	40	8	50
Parker, Posey; McClosky	40	6	50
Total	200		300

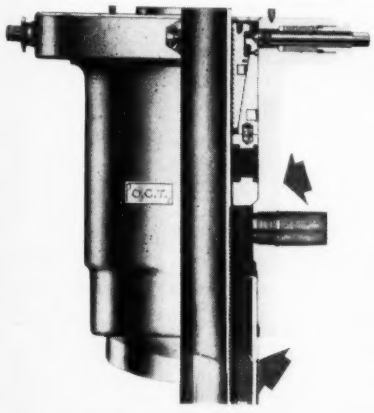
SAVE WITH "C-19"!

O-C-T "C-19"		CONVENTIONAL	
Initial Cost . .	$520.00	Initial Cost . .	$486.20
Rig Time for Setting . . .	7.00	Rig Time for Setting . . .	52.50
Blowout Cost . .	0.00	Blowout Cost	$???,???.??
Total	$527.00	Total	$538.70 + $???,???.??

O-C-T "C-19" CASING HEADS SET IN A FEW SECONDS, SAVE HOURS OF RIG TIME, STEP UP RIG SAFETY

SAVE YOUR CASH

O-C-T's unique-design "C-19" Casing Heads actually save more than enough costly rig time to offset the slight additional first cost of this heavy-duty deep-well head. A single unit quickly wrapped around the casing, latched and dropped into place through preventers, the "C-19" does away with the multitude of separate pieces to install.



SAVE YOUR WELL

The space between casing strings is sealed before the preventers are removed. First in dependability, O-C-T safely landed the long heavy casing strings on Superior's 17,000-ft. record depth, Caddo County, Oklahoma, well. Consider time saved, hazard eliminated, greater load capacity. Ask for the "C-19."

BLOWOUTS HAPPEN FAST!

With thousands of dollars invested in well bore, don't throw away your blowout protection at the last minute *for a matter of hours* to save a few dollars in well head costs.

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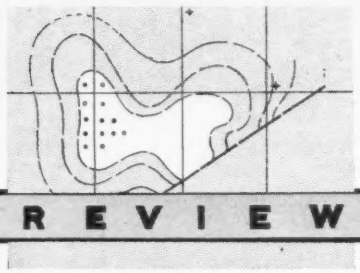
PRODUCTION—RESERVES



Annual, Cumulative Production, Remaining Reserves by Fields

REVIEW AND FORECAST

On this and the following four pages are detailed remaining reserves of the country's larger fields

PRODUCTION AND RESERVES—CALIFORNIA FIELDS

(In thousands of barrels)

SAN JOAQUIN VALLEY

	1948 production	January 1, 1949 Cumulative	January 1, 1949 Estimated reserves	January 1, 1949 No. of wells
Ant Hill	393	1,661	3,339	33
Antelope Hills	431	3,716	6,284	32
Belgian Anticline	408	558	4,442	11
Belridge, North	1,310	57,602	22,398	131
Belridge, South	2,821	44,326	30,674	757
Buena Vista	16,610	364,014	85,986	1,025
Canal	636	13,883	17,117	39
Coalinga, Eastside	6,723	265,656	64,344	848
Coalinga, Northeast	3,554	29,007	40,993	67
Coalinga, Nose	19,510	134,995	235,005	164
Coalinga, Westside	2,582	163,438	26,562	827
Coles Levee, North	5,489	42,938	72,062	119
Coles Levee, South	2,320	14,963	30,037	42
Cymric	6,182	17,162	60,838	255
Edison	4,121	26,974	37,026	304
Elk Hills	2,253	199,218	275,782	587
Fruitvale	2,388	42,755	24,245	201
Greeley	5,132	37,431	37,569	99
Helm	1,280	6,364	10,636	72
Jacalitos	2,124	7,244	12,756	109
Kern Bluff	451	469	4,531	95
Kern Front	3,264	68,730	36,270	687
Kern River	4,556	302,337	47,663	2,745
Kettleman North Dome	12,887	350,208	104,792	423
Lanare	502	2,272	2,728	29
Lost Hills	2,792	62,540	17,460	615
McKittrick	994	95,463	11,537	235
McKittrick Front	691	6,376	6,624	81
Midway-Sunset	15,167	736,026	113,974	3,112
Mount Poso	3,623	85,921	38,079	316
Mount Poso, North	438	7,175	4,825	80
Mountain View	1,322	50,422	9,578	184
Paloma	6,238	19,415	60,585	69
Pleasant Valley	1,333	6,623	13,377	26
Premier	1,097	11,975	12,025	199
Race Track Hill	717	2,210	5,790	37
Raisin City	1,105	5,884	7,116	49
Rio Bravo	4,441	47,341	52,659	101
Riverdale	1,173	7,964	12,036	59
Round Mountain	1,583	36,967	23,033	187
Salt Creek	2,112	4,868	17,132	69
Shark Tooth	389	1,813	8,187	60
Ten Section	2,362	44,094	47,906	127
Tejon Ranch	1,153	3,142	11,858	86
Miscellaneous	3,973	49,007	51,140	415
Total San Joaquin	160,630	3,483,147	1,819,000	15,808

COASTAL DISTRICT

Aliso Canyon	1,245	8,999	19,001	56
Capitan	932	12,829	12,171	70
Casmalia	402	15,855	1,145	53
Cat Canyon, East	212	4,637	1,363	22
Cat Canyon, West	5,705	36,275	46,725	171
Del Valle	3,536	14,640	34,360	131
Elwood	2,693	83,008	26,992	76
Gato Ridge	1,272	15,482	12,518	43
Lompoc	2,359	16,960	17,040	108
Newhall-Potrero	2,704	16,679	23,321	80
Oak Canyon	727	3,636	8,364	21
Orcutt	1,566	107,398	17,602	260
Oxnard	497	2,859	1,141	6
Padre Canyon	2,113	7,904	12,096	62

COASTAL DISTRICT (continued)

	1948 production	January 1, 1949 Cumulative	January 1, 1949 Estimated reserves	January 1, 1949 No. of wells
Rincon	1,166	23,625	17,375	105
San Miguelito	1,731	18,126	31,874	59
Santa Maria Valley	7,407	91,519	93,481	503
South Mountain	2,087	30,102	29,898	168
Ventura Avenue	17,786	355,654	184,346	676
Zaca Creek	588	946	6,054	19
Miscellaneous	2,407	58,041	14,133	723
Total Coastal Dist.	59,136	925,174	611,000	3,412

LOS ANGELES BASIN

Alondra	292	695	7,305	5
Brea-Olinda	5,326	198,014	46,986	439
Coyote, East	1,788	56,779	18,221	196
Coyote, West	5,607	160,038	49,962	275
Dominguez	4,910	178,113	66,887	406
East Los Angeles	425	1,007	15,993	8
Huntington Beach	20,825	417,153	172,847	1,242
Inglewood	4,416	164,893	45,107	363
Long Beach	8,268	734,684	90,316	1,161
Montebello	2,471	150,986	24,014	348
Newport	4,124	9,147	40,853	216
Playa Del Rey	708	53,805	6,195	121
Potrero	412	6,779	3,221	30
Richfield	2,271	109,619	20,381	341
Rosecrans-Athens	1,700	62,614	17,386	202
Santa Fe Springs	5,513	522,886	57,114	555
Seal Beach	4,167	113,858	41,142	199
Torrance	2,861	125,385	29,615	768
Wilmington	48,583	417,225	382,775	2,113
Miscellaneous	900	109,593	14,680	757
Total Los Angeles	125,567	3,593,273	1,151,000	9,745
Total California	345,333	8,001,594	3,581,000	28,965

ROCKY MOUNTAIN AREA

(In thousands of barrels)

COLORADO

Iles Dome	532	12,506	5,494	28
Rangely	13,412	36,658	273,342	531
Wilson Creek	2,599	13,303	29,697	31
Miscellaneous	727	36,944	6,467	149
Total Colorado	17,270	99,411	315,000	739

MONTANA

Cat Creek	506	17,196	2,804	167
Cut Bank	4,168	60,121	29,879	1,104
Elk Basin	2,025	7,921	27,079	57
Elk Basin, Northwest	374	464	2,536	8
Kevin-Sunburst	1,614	52,213	14,787	1,318
Miscellaneous	717	13,537	12,915	237
Total Montana	9,404	151,452	90,000	2,891

WYOMING

Big Muddy	745	30,829	6,171	189
Big Sand Draw	2,591	4,758	15,242	7
Byron	2,351	21,232	18,768	50

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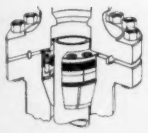
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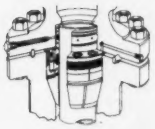
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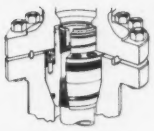
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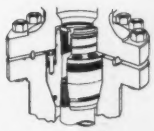
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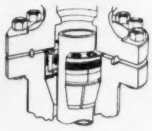
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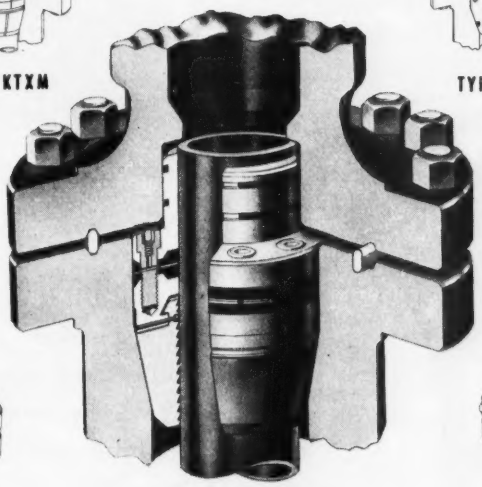
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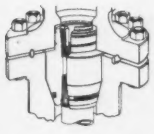
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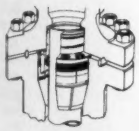
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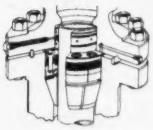
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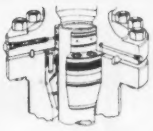
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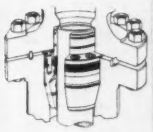
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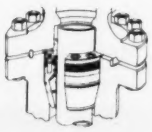
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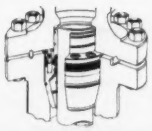
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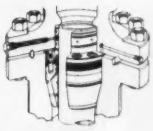
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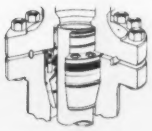
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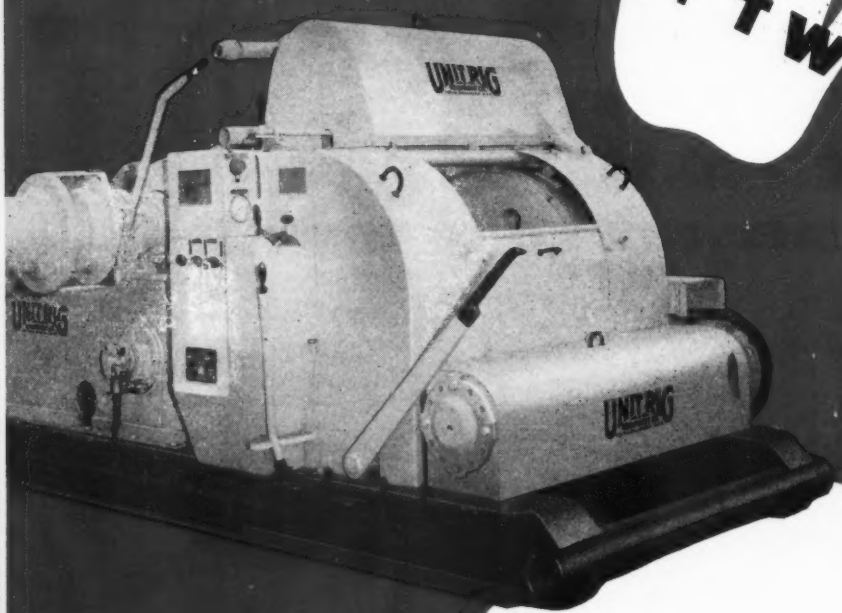

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WYOMING (Continued)

	1948 production	January 1, 1949 Cumulative	January 1, 1949 Estimated reserves	January 1, 1949 No. of wells
Circle Ridge	864	2,517	7,483	24
Cole Creek	571	3,972	10,078	34
Crooks Gap	875	2,569	9,431	9
Elk Basin	5,769	35,041	216,959	232
Frannie	1,670	14,744	15,256	61
Garland	2,102	12,503	21,497	70
Gebo	701	1,983	9,017	25
Grass Creek	1,120	37,371	15,629	349
Hamilton Dome	3,167	14,541	21,459	78
La Barge	386	11,020	3,980	136
Lance Creek	3,292	80,928	24,072	234
Little Buck Creek	512	1,176	2,324	17
Little Buffalo Basin	1,237	3,086	9,414	25
Lost Soldier	2,970	37,693	37,307	47
Mush Creek-Skull Creek	1,307	1,491	5,509	97
Oregon Basin	3,756	46,476	53,524	178
Quealey	522	3,167	4,833	21
Rock River	752	26,858	9,142	55
Salt Creek	4,614	331,536	68,434	1,775
Steamboat Butte	3,732	10,147	14,853	27
Wertz	2,241	16,343	18,657	25
Winkleman	773	2,016	7,984	9
Worland	1,560	1,883	18,117	11
Miscellaneous	5,160	51,122	99,860	827
Total Wyoming	55,340	807,002	745,000	4,612

PRODUCTION AND RESERVES—TEXAS

(In thousands of barrels)

TEXAS PANHANDLE

	1948 production	January 1, 1949 Cumulative	January 1, 1949 Estimated reserves	January 1, 1949 No. of wells
RAILROAD DIST. 10—				
Badger	3,565	63,664	41,336	1,092
Borger-Pantex	3,044	105,892	29,108	404
Finley	4,574	81,594	48,406	544
West Pampa	3,982	87,874	42,126	1,000
Miscellaneous	16,522	290,914	176,024	3,526
Total Tex. Panhandle	31,687	629,938	337,000	6,566

NORTH AND WEST CENTRAL TEXAS

RAILROAD DIST. 7-B—				
Reddin	1,109	3,589	9,411	129
Wimberly	1,494	7,189	17,811	192
Other fields	16,358	444,963	94,778	6,971
Subtotal Dist. 7-B	18,961	455,741	122,000	7,292
RAILROAD DIST. 9—				
Antelope	898	5,159	9,841	87
Burkburnett	1,331	165,007	19,993	1,633
Electra	2,775	158,649	41,351	2,567
Fargo	1,077	6,779	8,221	93
Hildreth	2,383	11,764	28,236	171
Hull-Silk-Sikes (incl. Caddo)	3,624	34,541	55,409	436
Joy	1,332	4,509	9,491	146
K.M.A.	5,439	122,929	57,071	2,244
Sivels Bend	1,596	3,935	10,065	61
Walnut Bend	3,606	20,189	24,811	244
Wilson	878	2,202	7,798	154
Other fields	26,096	513,176	122,713	11,685
Subtotal Dist. 9	51,035	1,048,839	395,000	19,521
Total N. & W. C. Tex.	69,996	1,504,580	517,000	26,813

EAST TEXAS

RAILROAD DIST. 5—				
Opelika	1,854	11,766	18,234	58
Sulphur Bluff	1,043	17,258	9,742	67
Tri-Cities	754	1,037	4,963	25
Van and Shallow	12,124	195,465	254,535	583
Other fields	2,882	284,754	40,526	1,028
Subtotal Dist. 5	18,657	510,280	328,000	1,761
RAILROAD DIST. 6—				
East Texas field	111,829	2,586,215	2,413,785	22,354
Cayuga	2,270	45,698	29,302	186
Coke	931	4,765	13,235	44
Hawkins	17,621	96,396	403,604	608
Long Lake	2,498	26,119	28,881	133
Manziel	943	3,554	9,446	51
Merigale-Paul	1,624	2,760	10,240	131
New Hope	1,527	7,051	17,949	68
Quitman	3,707	13,872	31,128	120
Rodessa	1,100	59,312	11,688	226
Sand Flat	824	2,067	3,933	51
Talco	8,795	110,647	109,353	721
Other fields	5,080	31,875	53,456	380
Subtotal Dist. 6	158,749	2,990,931	3,136,000	25,073
Total East Texas	177,406	3,501,211	3,464,000	26,806

SOUTHWEST TEXAS

RAILROAD DIST. 4—				
Agua Dulce-Stratton	10,517	68,092		438
Borregas	885	1,096		45

SOUTHWEST TEXAS (Continued)

	1948 production	January 1, 1949 Cumulative	January 1, 1949 Estimated reserves	January 1, 1949 No. of wells
Brayton	1,527	4,668		63
La Gloria	6,656	23,683		173
Monte Negra	12	40		1
Seeligson	12,269	58,404		662
Tijerina-Canales-Blucher	4,437	12,129		169
Total S. Texas Giant	36,303	168,112	1,181,888	1,556
Aransas Pass	711	17,426	4,574	51
Benavides	949	18,538	11,462	147
Colorado	1,725	8,689	16,311	230
Conoco-Driscoll	1,128	10,965	10,035	64
Flour Bluff and East	1,074	14,890	13,110	86
Garcia	1,397	5,713	14,287	101
Govt. Wells, No. and So.	1,823	62,862	17,138	563
Hoffman	1,465	16,956	15,044	355
Kelsey (all zones)	2,629	10,725	19,375	187
Loma Novia	1,008	33,919	15,081	398
Luby	916	14,624	10,376	125
Midway	1,629	10,301	13,699	93
Odem	818	4,859	8,141	79
Plymouth	3,702	46,357	43,643	163
Richard King	1,036	8,505	12,495	75
Rincon	2,709	19,647	30,353	133
Saxet	1,988	64,339	20,661	149
Seven Sisters	2,741	31,540	28,460	370
Sun	2,157	8,706	18,294	84
Taft	1,063	10,839	12,161	74
White Point, East	4,562	37,000	43,000	247
Willamar	4,029	17,873	72,117	217
Other fields	21,416	262,524	201,253	3,741
Subtotal Dist. 4	98,978	905,909	1,833,000	9,288
RAILROAD DIST. 1—				
Charlotte	1,858	2,742	17,258	183
Darst Creek	2,562	70,783	34,217	320
Luling-Branyon	1,478	90,981	19,019	611
Other fields	4,014	111,927	40,506	2,237
Subtotal Dist. 1	9,912	276,433	111,000	3,351
Total S.W. Texas	108,890	1,182,342	1,944,000	12,639

GULF COAST TEXAS

RAILROAD DIST. 2—				
Bloomington	2,070	2,319	12,681	124
Bonnieview	1,294	3,644	6,356	70
Falls City	1,704	4,631	15,339	64
Ganado and Deep	777	4,055	7,945	57
Ganado, West	838	4,457	12,553	56
Greta and Deep	4,399	48,978	66,022	199
Heyser	1,907	32,793	21,207	170
La Rosa and North	1,277	11,327	14,673	70
La Ward, North	1,022	6,116	15,884	98
Lolita	2,169	16,940	24,060	219
McFaddin and North	1,922	14,997	20,003	82
Placedo and East	2,270	27,171	21,829	164
Refugio area	3,164	57,427	42,573	208
Roche	1,052	1,313	8,687	36
Slick-Wilcox	1,671	7,276	17,624	51
Tom O'Connor	18,225	134,285	365,715	600
Tulsita-Wilcox	742	21,646	8,354	41
West Ranch	6,986	54,313	130,687	466
Other fields	11,426	84,254	124,808	1,079
Subtotal Dist. 2	64,915	517,942	937,000	3,854
RAILROAD DIST. 3—				
Amelia	1,573	16,587	23,413	84
Anahuac	10,758	87,172	162,828	342
Barbers Hill, Deep	1,937	87,266	27,734	126

GULF COAST TEXAS (Continued)

	1948 production	January 1, 1949 Cumulative	January 1, 1949 Estimated reserves	No. of wells
Bay City and North	1,893	16,552	13,448	78
Boling	890	10,728	6,272	85
Cedar Point	762	5,211	6,789	37
Chocolate Bayou (all)	2,758	4,482	20,518	29
Clear Lake	1,119	10,026	11,974	27
Conroe	20,440	269,604	280,396	856
Dyersdale	1,064	5,690	9,310	76
Esperson Dome	810	11,467	8,533	62
Fairbanks	2,142	25,767	29,233	274
Fannett	2,484	17,758	17,242	66
Fig Ridge	1,208	12,087	5,913	68
Gillock	1,671	15,756	24,244	96
Goose Creek	883	81,990	9,010	119
Hastings	21,648	168,906	281,094	665
High Island	1,319	24,864	11,216	70
Hull	1,526	105,058	19,942	164
Humble (all)	1,190	132,708	12,292	216
Hutchins-Kubela (all)	752	3,505	6,495	49
Katy	5,020	23,559	96,441	85
Lake Creek	1,700	8,666	21,334	24
Livingston (all)	1,901	15,250	19,750	145
Lovell Lake	1,480	14,489	12,511	104
Magnet-Withers	2,765	29,937	34,063	245
Manvel	2,932	40,051	39,949	156
Markham, North	1,195	7,772	12,228	43
Mercy and West	893	5,956	9,044	37
North Withers	2,904	21,933	29,067	154
Old Ocean	5,954	50,687	119,313	71
Oyster Bayou	4,213	14,971	35,021	34
Pierce Junction	832	38,749	9,251	63
Raccoon Bend	2,530	43,221	35,771	151
Red Fish Reef	1,202	5,076	7,924	25
Saratoga	849	32,314	6,686	229
Sheridan	2,200	6,624	28,376	26
Silsbee	1,049	8,601	6,399	50
Sour Lake	1,209	84,906	15,094	170
South Houston	1,644	17,457	25,543	75
Stowell	3,710	26,987	48,013	97
Sugarland	1,868	43,847	28,153	44
Sugar Valley	2,389	4,131	15,869	98
Thompson	12,862	104,228	150,772	219
Thompson, North	1,748	8,746	16,254	54
Thompson, South	2,348	18,011	26,989	77
Tomball	3,507	44,131	40,869	408
Webster	20,768	125,638	254,362	205
West Columbia (all)	2,591	105,832	29,168	154
Other fields	22,991	484,933	137,890	1,892
Subtotal Dist. 3	196,081	2,549,887	2,300,000	8,614
Total Gulf Coast	260,996	3,067,829	3,237,000	12,468

WEST TEXAS

RAILROAD DIST. 7-C—				
Barnhart	1,570	7,697	16,303	60
Big Lake	1,114	108,913	16,087	187
Jameson	991	1,194	13,806	40
McCamey	3,409	74,364	50,636	868
Midway Lane	1,242	1,287	8,713	25
Todd, Deep	5,052	13,975	71,025	89
World	942	12,412	11,588	113
Other fields	2,430	9,148	36,842	344
Subtotal Dist. 7-C	16,750	228,990	225,000	1,726
RAILROAD DIST. 8—				
Abell (all)	815	6,584	9,416	96
Adair	899	1,053	16,947	81
Anton-Irish	2,176	2,941	13,059	105
Andector	3,379	4,210	55,790	74
Bedford	1,199	2,074	32,926	14
Block 31	1,742	4,220	45,780	44
Cedar Lake	978	4,921	8,079	66
Cowden, North	8,978	75,481	149,519	709
Cowden, South	1,438	10,135	16,865	197
Dollarhide	3,420	4,198	60,802	76
Embar	1,789	8,712	16,288	38
Emma	861	6,000	9,000	75
Foster	6,980	51,160	93,860	651
Fuhrman-Mascho	1,624	11,185	18,715	261
Fullerton	16,011	50,733	349,267	651
Garza	2,524	5,578	34,422	236
Goldsmith (all)	11,128	93,208	306,792	1,108
Hendrick	1,223	213,501	16,499	219
Howard-Glasscock	5,581	134,481	75,519	952
Iatan, East-Howard	1,301	24,745	15,255	429
Jordan	2,854	19,411	30,589	253
Kermit	877	35,700	14,300	540
Keystone (all sands)	14,586	65,601	354,399	790
Levelland	7,637	10,527	89,473	888
McElroy	10,629	185,544	149,456	798
Mabee	1,116	4,608	20,392	95

WEST TEXAS (Continued)

	1948 production	January 1, 1949 Cumulative	January 1, 1949 Estimated reserves	No. of wells
Martin (all sands)	2,318	3,638	56,262	59
Means	2,190	14,639	25,331	200
Midland Farms	1,197	2,838	12,168	34
Monahans (all)	1,261	3,830	46,170	53
Penwell	1,038	29,845	15,155	183
Sand Hills (all)	4,889	26,418	68,582	360
Seminole	8,124	48,075	151,925	331
Shafter Lake	1,736	1,753	38,247	53
Sharon Ridge	1,174	4,874	10,226	518
Slaughter	19,184	129,781	370,219	2,122
Toborg	1,223	11,070	6,930	570
T-X-L	24,089	46,920	204,080	307
Waddell	1,475	11,445	14,555	168
Ward, North (inc. Estes)	3,863	64,426	55,574	911
Wasson (all)	28,884	178,285	471,715	1,602
Welch	1,550	3,858	16,142	147
Wheeler	4,057	8,833	41,167	83
Yates	18,103	349,874	450,126	609
Other fields	19,432	196,943	312,017	3,938
Subtotal Dist. 8	257,532	2,173,856	4,370,000	21,694
Total West Texas	274,282	2,402,846	4,595,000	24,420

NEW MEXICO

Arrowhead	1,460	14,531	20,469	120
Bowers	650	909	9,091	71
Brunson	2,660	4,374	20,626	63
Caprock	931	2,013	19,987	107
Cooper-Jal	722	25,505	7,495	94
Drinkard	6,236	10,366	39,634	291
Eunice	4,770	91,239	58,761	457
Eunice, South	590	9,867	5,133	94
Grayburg-Jackson	1,869	23,126	18,876	297
Hobbs	3,841	123,603	51,397	255
Langlie-Mattix	1,075	23,557	14,443	295
Loco Hills	748	12,416	5,584	190
Lovington	535	5,183	6,817	52
Lovington, West	692	2,445	5,555	51
Maljamar	2,033	17,663	27,337	248
Monument	6,902	93,857	91,143	485
Paddock	1,584	3,584	16,416	93
Vacuum	4,504	43,680	86,320	385
Other fields	5,805	78,225	70,916	1,385
Total New Mexico	47,607	586,143	576,000	5,033

PRODUCTION AND RESERVES—LOUISIANA

(In thousands of barrels)

NORTH LOUISIANA

Benton	1,383	1,561	13,439	13
Caddo	3,432	179,189	25,811	1,961
Cotton Valley	2,886	58,245	26,755	171
Delhi-Big Creek	10,483	28,000	137,000	352
Haynesville	4,115	98,190	26,810	355
Holly Ridge	1,035	5,755	9,245	37
Homer	887	78,178	11,822	320
Knowles	542	582	3,418	20
Lake St. John	8,094	21,598	73,402	158
Lisbon	957	14,380	7,620	132
Little Creek	593	6,137	4,863	66
Nebo	2,554	22,147	22,853	147
Olla	2,137	26,374	23,626	181
Ora	2,987	3,654	5,346	211
Rodessa	1,519	91,500	11,500	283
Sligo	512	6,102	3,898	84
Urania	837	30,900	9,100	217
Miscellaneous	2,759	123,976	23,492	765
Total N. Louisiana	47,712	796,468	440,000	5,473

SOUTH LOUISIANA

Anse La Butte (Deep and Shallow)	2,400	19,814	35,116	82
Avery Island	2,115	6,660	38,340	26
Barataria	1,618	10,615	17,385	27
Barataria, West	1,606	2,193	12,807	23
Bay St. Elaine	1,480	4,015	15,985	24
Bayou Blue	690	5,773	6,227	34
Bayou Sale	5,220	22,178	67,822	72
Black Bayou	1,027	15,284	9,716	26
Bosco	890	29,301	9,699	39
Caillou Island	3,552	46,596	33,404	73
Charenton	1,512	17,247	12,753	122
Crowley, North	1,692	16,286	18,714	37
David Haas	673	703	6,297	14
Delta Farms	6,754	23,918	66,082	93

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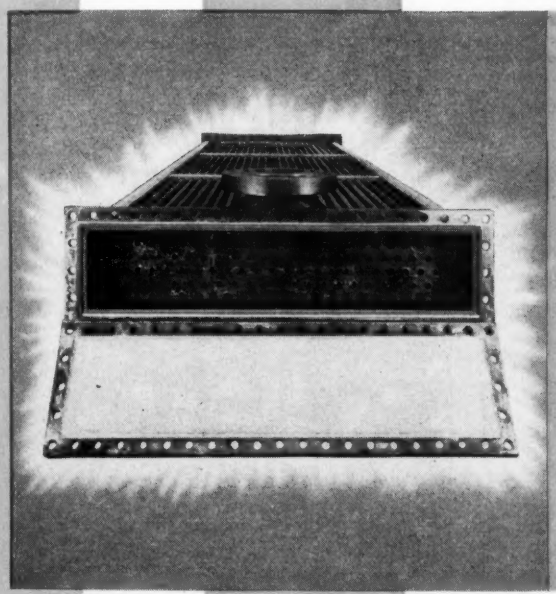
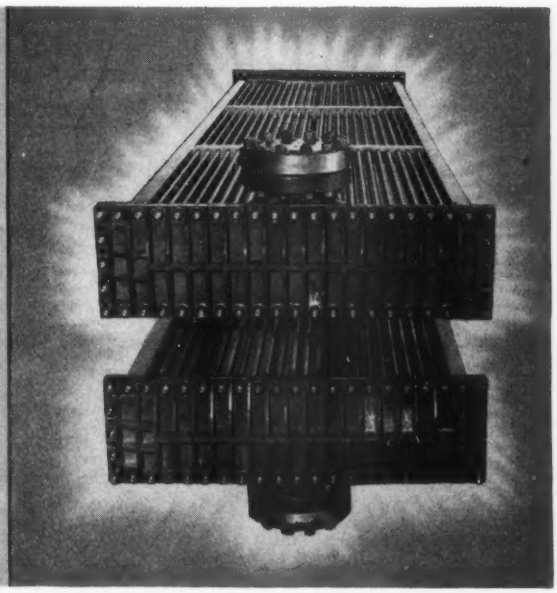
● Special Construction for **THE PETRO-CHEMICAL INDUSTRY**

COYNCO STRATUBE SECTIONS are available in stainless steel or other alloy construction for the solution of unusual corrosion problems in the petro-chemical field. The wide variety of sizes, types and pass arrangements permits choice of sections exactly suited to each particular cooling problem.





Typical of a large group of sections supplied to a Gulf Coast petro-chemical plant are these high pressure stainless steel sections. Headers are removable cover plate type of cast stainless steel with tongue and groove type confined gasket construction. Tubes are stainless steel.

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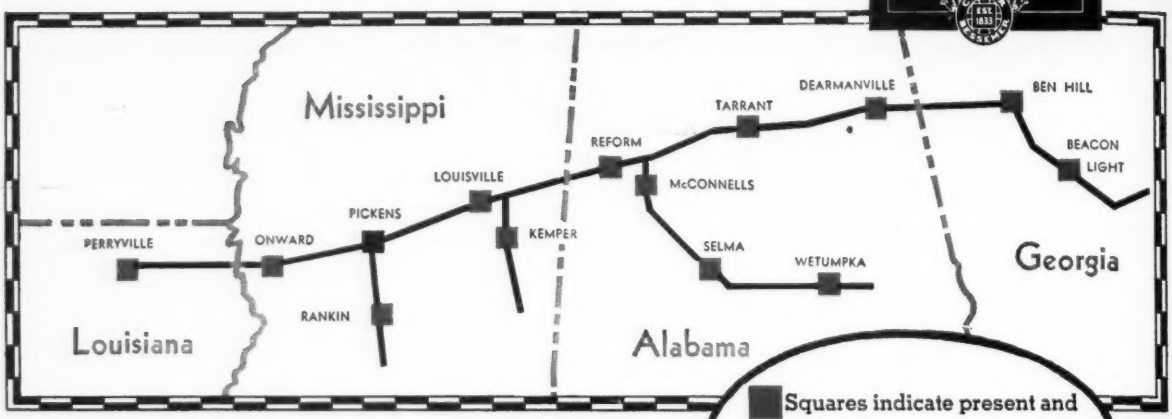
from Perryville to Ben Hill...

Southern Natural now has 55,800 GMV horsepower installed or on the way

Another Example of Efficient Power at Lower Cost

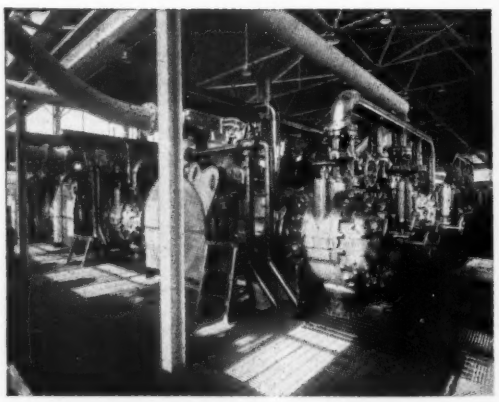


■ Squares indicate present and proposed compressor stations, those in red powered all or in part by Cooper-Bessemers now installed or on order.

Southern Natural Gas Company's experience with Cooper-Bessemer compressors dates back to 1929 when their first Cooper-Bessemer horizontals were installed—units that are still in service. However, with the development of the GMV, in 1935, Southern Natural met their new, expanding needs with these modern V-angles . . . saved space, housing and operating costs, gained the simplified, low-cost maintenance and easy control for which GMV's are so well known.

As the line continued to grow, more and more GMV's were installed. Today, Cooper-Bessemers on the Southern Natural line total 43,970 horsepower, 33,800 of it provided by GMV's, and with an additional 22,000 GMV horsepower now on the way!

Yes, "a good thing bears repeating", and you'll find this to be the case with GMV's on line after line. It's the best kind of evidence that with GMV's you can count on outstanding performance year after year.



Perryville Station, Perryville, La., containing 6 GMV-8's totaling 4,800 hp.

The Cooper-Bessemer Corporation

MOUNT VERNON, OHIO — GROVE CITY, PENNA.

New York City Washington, D. C. Bradford, Pa. Parkersburg, W. Va. San Francisco, Calif. Houston, Dallas, Greggton, Pampa and Odessa, Texas Seattle, Wash. Tulsa, Okla. Shreveport, La. St. Louis, Mo. Los Angeles, Calif. Caracas, Venezuela Gloucester, Mass. Calmes Engineering Co., New Orleans, La.

SOUTH LOUISIANA (Continued)

	1948 production	January 1, 1949 — Cumulative	Estimated reserves	No. of wells
Egan	2,472	6,373	33,627	58
Eola	1,168	24,838	10,162	68
Erath	6,252	30,748	94,252	32
Garden Island Bay	1,377	13,635	13,265	42
Gibson	835	14,516	10,484	24
Gibson, Northeast	1,136	2,566	12,434	15
Golden Meadow	3,495	31,561	35,439	191
Good Hope	2,359	7,081	27,919	34
Grand Bay	3,698	24,225	25,775	62
Gueydan	1,636	12,106	17,894	27
Gueydan, West	397	2,976	3,024	16
Hackberry, East	1,829	38,325	21,675	61
Hackberry, West	2,470	25,451	34,549	63
Horseshoe Bayou	876	5,016	14,984	12
Iberia	1,557	39,135	20,865	60
Iowa	2,390	64,786	35,214	58
Jennings (Deep and Shallow)	1,527	99,795	16,205	92
Lafitte	4,118	56,767	63,233	63
Lake Chicot	1,203	5,831	9,169	23
Lake Pelto	1,590	8,947	11,053	26
Lake Salvador	1,684	10,474	19,526	26
Lake Verret, West	1,391	8,578	13,422	40
La Pice	969	4,055	8,945	21
Leeville	1,806	33,547	16,453	69
Longville	732	1,007	3,993	14
Neale	925	11,567	8,433	47
Paradis	3,925	26,869	48,131	74
Pine Prairie, Deep	1,380	11,177	10,823	69
Port Barre	1,616	18,487	14,513	71
Quarantine Bay	3,723	25,926	44,074	49
Ritchie	516	2,393	5,607	32
St. Gabriel	1,609	12,524	17,476	29
Tepetate	721	15,080	4,920	53
Tepetate, North	631	1,540	3,460	26
Tepetate, West	2,101	6,842	13,158	38
University	2,058	25,133	21,867	70
Venice	3,760	23,725	41,375	59
Ville Platte	1,892	38,497	21,503	184
Vinton	3,567	60,327	49,673	113
Weeks Island (all)	1,587	2,481	37,519	17
West Bay	2,084	9,348	24,652	38
West Cote Blanche Bay	1,316	6,516	15,484	26
White Lake, East	1,331	7,234	8,766	33
White Castle	1,581	13,953	15,047	39
Other fields	25,741	297,122	279,611	927
Total S. Louisiana	142,260	1,413,916	1,610,000	3,883

PRODUCTION AND RESERVES—ARKANSAS

(In thousands of barrels)

Atlanta	1,405	10,800	14,200	56
Buckner	866	7,439	10,561	44
Dorcheat-Macedonia	1,262	12,193	17,807	103
Fouke	1,046	5,506	6,494	49
Haynesville	516	2,732	4,268	34
Magnolia	4,628	55,108	54,892	114
McKamie	1,083	7,589	10,411	22
Midway	2,841	16,600	28,400	45
Schuler	3,751	59,077	34,923	88
Smackover	3,836	418,874	56,126	1,500
Spirit Lake	487	886	2,114	20
Stephens	1,284	17,441	7,559	352
Troy	424	4,471	5,529	58
Village	2,055	8,487	8,513	78
Wesson	3,067	5,480	14,520	131
Miscellaneous	3,371	122,612	23,683	784
Total Arkansas	31,622	755,295	300,000	3,478

PRODUCTION AND RESERVES—MISSISSIPPI

(In thousands of barrels)

Baxterville	7,925	14,292	75,708	109
Brookhaven	5,013	10,641	44,359	139
Carthage Point	1,289	1,803	8,197	8
Cranfield	6,836	19,439	90,561	96
Eucutta	2,723	10,189	32,811	118
Heidelberg	5,230	18,702	81,298	153
La Grange	2,884	3,871	31,219	87
Mallalieu	6,141	8,575	41,425	86
Pickens	1,345	11,245	13,755	47
Tinsley	6,054	107,034	52,966	279
Yellow Creek	819	821	11,179	37
Miscellaneous	1,066	3,128	11,522	169
Total Mississippi	47,325	209,740	495,000	1,328

PRODUCTION AND RESERVES—OKLAHOMA

(In thousands of barrels)

	1948 production	January 1, 1949 — Cumulative	Estimated reserves	No. of wells
Allen (Deep)	1,129	59,625	20,375	277
Apache	2,181	14,425	15,575	46
Arcadia, Northeast	442	1,853	4,147	21
Avant	619	98,985	7,015	684
Aylesworth	514	2,296	2,704	42
Bebee	601	17,432	7,568	100
Billings (Deep and Shallow)	377	25,755	2,245	74
Bowlegs	1,262	129,132	20,868	180
Brock, West	536	690	2,310	32
Burbank	2,432	226,000	24,000	1,684
Burbank, South	1,076	45,433	6,567	218
Butterly, Northwest	466	918	2,082	11
Cache Creek	1,945	4,924	8,076	279
Carr City	365	34,346	2,654	56
Cement	4,552	51,807	48,193	584
Ceres, South	746	858	2,142	26
Chitwood	616	917	1,083	11
Coon Creek	1,731	4,000	4,000	41
Crescent	875	21,759	3,241	131
Cromwell	641	62,236	5,764	207
Cumberland	3,955	29,771	45,229	145
Cushing	2,862	379,654	40,346	1,518
Davenport, South	799	1,194	3,806	59
Duncan, West	471	8,871	2,129	117
Earlsboro	579	131,170	6,830	133
Ed Cox	594	2,528	4,472	170
Edmond	470	23,039	2,961	68
Edmond, West	9,322	82,500	67,500	769
Empire	675	17,784	5,216	259
Fitts	1,141	106,142	8,858	495
Fourdee	512	738	3,262	45
Garber	471	59,093	4,907	469
Garden Grove	675	1,153	2,847	71
Glenn Pool	2,610	235,943	24,057	1,752
Golden Trend (Garvin-McClain counties)	12,246	18,569	141,431	461
Healdton	2,629	208,419	36,581	1,964
Hewitt and West Hewitt	1,633	107,044	17,956	910
Hoover, Northwest	434	1,643	3,357	79
Inconium, Northwest	875	912	3,088	21
Jones, Northeast	783	983	4,017	63
Knox	1,758	19,557	10,453	247
Konawa	381	17,553	2,447	76
Little River	1,416	121,799	18,201	187
Lone Grove, Southwest	1,199	5,543	4,457	97
Lucien	625	35,396	4,604	115
Milfay	508	1,549	2,451	39
Moore, West	478	3,314	2,686	36
Naval Reserve	375	21,350	2,650	228
Oklahoma City	8,543	660,743	64,257	691
Oscar	546	13,100	3,900	218
Pauls Valley	1,791	15,831	12,169	80
Pauls Valley, East	371	3,077	1,923	88
Perry, Northwest	370	401	1,599	19
Ramsey	689	12,729	6,271	32
Seminole City	1,086	139,272	10,728	171
Sholem Alechem	4,736	47,268	52,732	407
Sholem Alechem, Northwest	460	460	2,540	20
Slick	369	36,454	1,546	178
St. Louis	1,330	171,551	18,449	382
Soldier Creek	1,890	4,019	4,981	317
Tatums	1,119	20,842	11,158	289
Tussy	1,056	11,259	8,741	187
Velma (Deep and Shallow)	12,486	30,866	69,134	985
Velma, West	739	2,061	7,939	40
Watchorn, East	735	5,476	3,524	27
Wildcat Jim	1,020	21,769	6,231	165
Witcher	1,497	1,527	6,473	71
Yale-Quay	828	26,672	7,328	179
Miscellaneous	39,437	2,214,007	146,969	33,863
Total Oklahoma	154,680	5,885,986	1,116,000	53,706

PRODUCTION AND RESERVES—KANSAS

Adell	473	1,225	4,775	38
Albert	739	3,060	3,940	96
Barry	796	3,279	4,721	42
Bemis-Shutts	5,748	54,801	31,199	525
Big Creek	836	10,405	5,595	151
Bloomer	3,161	30,531	19,469	278
Bornholdt	796	11,912	5,088	136
Boyd	397	1,509	4,491	33
Burnett	3,724	31,711	28,289	253
Burnett, Northwest	621	990	5,010	25
Burnett, Southwest	651	797	3,203	57
Burrton-Haury	1,024	43,085	6,915	324
Carmi	946	7,038	4,962	99
Chase	2,583	48,640	13,460	460

KANSAS (Continued)
(In thousands of barrels)

	1948 production	January 1, 1949 Cumulative	January 1, 1949 Estimated reserves	No. of wells
Chitwood	930	4,491	5,501	74
Crowther	402	2,115	1,885	50
Drach	534	3,326	2,674	44
Edwards	1,228	10,449	9,551	106
El Dorado	3,026	198,622	51,378	1,719
Fairport	801	20,057	7,943	162
Forrest Hill	466	1,742	1,258	45
Geneseo	2,291	24,132	20,868	189
Gorham	1,667	34,489	18,511	258
Hall-Gurney	3,485	37,403	27,597	687
Hittle	489	7,817	4,183	48
Kraft-Prusa	6,871	38,113	36,887	570
Lindsborg	562	4,776	4,224	106
Lost Springs	504	7,732	3,268	175
Morel	1,717	7,452	9,548	103
Paden	419	1,298	2,702	42
Paradise Creek	421	637	2,363	31
Peace Creek	967	11,325	3,675	121
Ray	1,390	8,389	7,611	101
Raymond	563	11,701	3,299	70
Richardson	776	9,329	5,621	60
Ritz-Canton	579	40,588	4,412	191
Russell	415	7,960	2,040	62
Ryan	369	941	1,059	48
Silica	4,824	82,128	32,872	732
Sittner	549	2,332	2,668	56
Skinner	422	936	2,064	52
Stoltenberg	2,483	27,538	10,462	344
Trapp	10,404	105,675	74,325	1,271
Voshell	397	27,296	1,704	65
Walters	377	4,249	1,751	49
Wellington	440	6,832	3,168	128
Zenith	583	23,722	2,278	282
Miscellaneous	33,867	850,933	141,533	17,763
Total Kansas	107,813	1,875,508	652,000	28,321

PRODUCTION AND RESERVES—ILLINOIS

Albion	595	6,946	6,054	205
Allendale	571	4,560	3,440	217
Benton	664	20,198	4,802	227
Bible Grove	1,335	8,709	9,291	275
Boulder	374	3,340	2,660	29
Boyd	1,210	5,523	7,477	106
Bungay	397	2,740	1,760	81
Centralia	1,251	32,278	10,222	592
Clay City-Noble Consolidated	8,585	117,264	42,736	2,410

THE OIL AND GAS JOURNAL

"Now, you're sure, it's like th' boys say—you like a good practical joke? ?"

ILLINOIS (Continued)
(In thousands of barrels)

	1948 production	January 1, 1949 Cumulative	January 1, 1949 Estimated reserves	No. of wells
Dale-Hoodville	1,323	25,384	14,616	412
Dix	403	5,780	4,220	91
Frankfort, West	456	1,559	1,441	49
Herald	418	2,178	1,322	116
Inman, East	1,102	4,985	4,105	174
Iola	648	5,912	2,588	178
Johnsonville	1,173	24,336	5,664	387
Keensburg	635	12,479	2,521	327
Louden	6,715	143,575	66,425	1,928
Marine	1,080	4,684	9,316	131
Mattoon	1,299	8,132	6,868	306
Mills Shoals	414	4,935	3,065	137
Mount Carmel	454	7,826	2,174	325
New Harmony	2,283	40,358	16,642	793
Parkersburg	562	5,478	2,522	120
Passport	1,079	1,231	3,769	47
Patoka	769	8,820	3,180	130
Phillipstown	1,032	8,484	5,516	258
Roland	1,154	8,423	3,577	191
Rural Hill	1,020	11,126	5,876	247
Sailor Springs	1,320	4,708	6,292	190
Salem	4,706	208,080	41,920	2,297
St. James	554	10,419	4,581	170
Stokes-Brownsville	631	5,686	2,314	160
Tonti	526	8,681	3,319	74
Woodlawn	649	11,055	3,945	152
Bridgeport	1,905	240,440	24,560	3,495
Robinson	1,236	155,618	14,382	6,674
Miscellaneous	13,504	182,918	46,838	6,592
Total Illinois	64,032	1,364,848	402,000	30,355

PRODUCTION AND RESERVES—MICHIGAN

Coldwater	2,196	6,561	11,439	75
Deep River	2,885	10,353	14,647	115
Kawkawlin	796	5,009	4,991	192
Kimball Lake	1,616	2,478	5,522	104
Pentwater	391	391	4,609	47
Porter-Yost	549	43,767	6,233	280
Reed City	1,440	35,999	8,001	180
Stony Lake	836	1,257	1,743	28
Miscellaneous	5,914	183,743	35,815	2,406
Total Michigan	16,623	289,558	93,000	3,427

FRANK W WHEATLEY
Feature of the Week

UNDISPUTED FOR COMPLETENESS OF LINE

Reciprocating Power Pumps from 10 to 300 H.P. Pressures up to 8,000 lbs. Volumes up to 40,000 B.P.D. Direct and V-Belt driven . . . Portable and Stationary . . . Oil - Mud - Acid - Salt Water - Water Flooding.

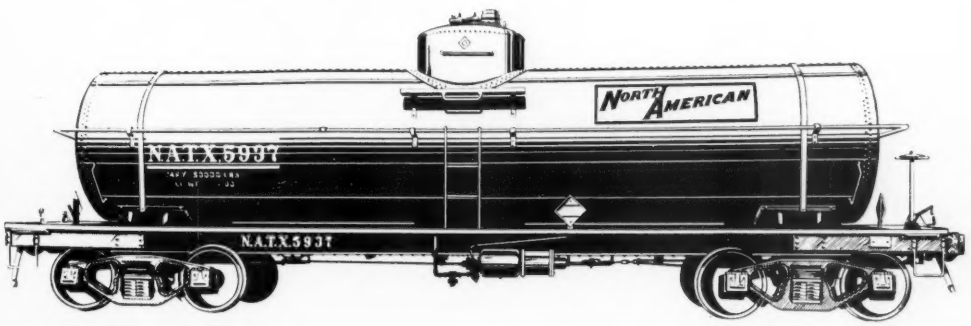
When It Comes to Pumps, Come to Wheatley
Frank Wheatley Pump & Valve Mfr.
Hale Station, Sand Springs Road, Tulsa, Oklahoma

Leading PETROLEUM *Shippers use North American tank cars*

Year after year through four decades North American has moved important quantities of petroleum and petroleum products to markets all over the nation. Today this experience insures maximum efficiency in the operation of our tank cars.

This experience can be applied advantageously to many transportation problems.

That's why leading shippers continue to go North American.



NORTH AMERICAN CAR CORPORATION
NORTH WESTERN REFRIGERATOR LINE COMPANY

A NATION-WIDE ORGANIZATION WITH BRANCH OFFICES IN IMPORTANT MARKET CENTERS

231 SOUTH LASALLE STREET, CHICAGO 4, ILLINOIS

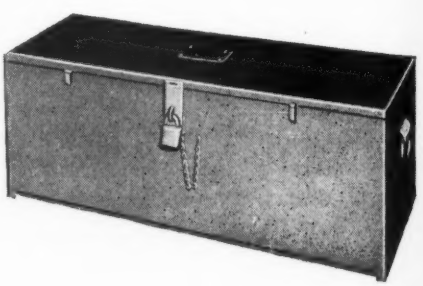
Republic Bank Building, Dallas 1, Texas
739 Pillsbury Avenue, St. Paul 4, Minnesota
Shell Building, St. Louis 3, Missouri
60 East 42nd St, New York 17, New York
681 Market Street, San Francisco 5, California

341 KENNEDY BUILDING, TULSA 3, OKLAHOMA

HERE'S HOW YOU SAVE

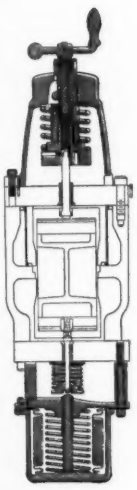
SAVE ON SPARE PARTS because of high degree of interchangeability of the new Type DP line. (Cross-section drawing shows parts interchangeable on all frame sizes.)

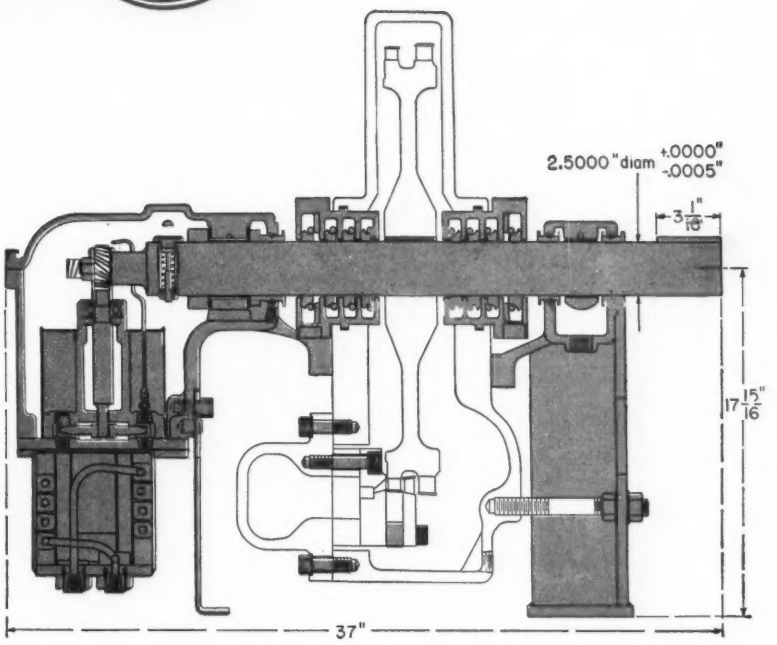
You can reduce your spare parts inventory with this standard kit, containing parts applicable to *all* standard Type DP turbines. With this set of packaged spares *you save 75%* of price of comparable set of loose spares for previous designs.



With the DP you save money on first cost too. Only G.E. offers hydraulic governing (30% adjustable speed range) on a standard turbine — at no extra cost.

WITH GE TURBINES





PARTS IN COLOR INTERCHANGEABLE ON ALL FRAME SIZES

SAVE TIME when installing DP turbines or when re-locating them in your plant. (Drawing shows dimensions common to all frame sizes.) Standard shaft height permits you to use a fixed mounting height on all your turbine drives. Standardization of the DP saves time on deliveries too—shipment time is approximately 20 weeks.

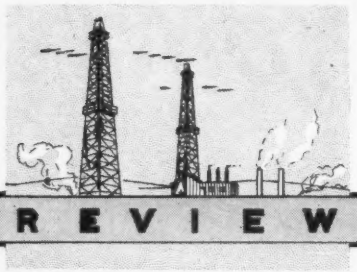
When it comes to alignment, you'll appreciate the DP's center-line support — now standardized on all frame sizes. Center-line support eliminates mis-alignment resulting from expansion from normal heating.

SAVE TROUBLE because of superior design features of the new Type DP — features such as: totally enclosed governing system protected in an oil atmosphere against rusting and sticking (particularly a problem on standby units); nonsparking overspeed trip, suitable for explosive atmospheres; new long-life solid-backed bearings; Monel-sprayed shaft at packings to eliminate corrosion; positive pressure lubrication; balanced valve design, and many other improvements to reduce maintenance.

The new Type DP is not a "standard turbine" for a narrow range of ratings only, but a standardized *line*, in ratings from 10 to approximately 1200 hp, speeds from 1000 to 5000 rpm. Thus, if your turbine drives fall within this wide range, you can save money — time — and trouble — by standardizing on the Type DP. For full information get in touch with your G-E representative. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

252-31



Exploratory and Development Drilling —Where It Occurred and the Results

REVIEW AND FORECAST

TEXAS GULF COAST (District 2)

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	25	1	1	23	134,488
February	16	7	0	9	105,970
March	17	3	2	12	111,208
April	27	3	3	21	182,096
May	24	4	1	19	154,362
June	16	4	0	12	95,824
July	27	3	3	21	160,088
August	12	3	1	8	74,040
September	20	3	5	12	127,855
October	15	1	3	11	101,261
November	21	2	2	17	132,293
December	19	1	4	14	123,660
Total	239	35	25	179	1,503,145

TEXAS GULF COAST (District 2)

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	53	40	3	10	302,613
February	38	30	2	6	213,568
March	24	23	1	0	135,396
April	60	44	6	10	352,161
May	47	33	4	10	266,794
June	39	34	0	5	239,694
July	44	34	4	6	252,443
August	42	30	3	9	241,312
September	45	31	3	11	272,713
October	37	28	2	7	224,110
November	42	31	4	7	259,859
December	31	18	5	8	200,859
Total	502	376	37	89	2,961,522

TEXAS GULF COAST (District 2)

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	78	41	4	33	437,101
February	54	37	2	15	319,538
March	41	26	3	12	246,604
April	87	47	9	31	534,257
May	71	37	5	29	421,156
June	55	38	0	17	335,518
July	71	37	7	27	412,531
August	54	33	4	17	315,352
September	65	34	8	23	400,568
October	52	29	5	18	325,371
November	63	33	6	24	392,152
December	50	19	9	22	324,519
Total	741	411	62	*268	4,464,667

*Includes 14 service wells.

TEXAS GULF COAST (District 2)

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Bee	20	1	1	18	118,358
Calhoun	19	3	2	14	153,507
DeWitt	9	3	1	5	67,689
Goliad	25	11	4	10	169,931
Gonzales	7	1	0	6	29,023
Jackson	25	5	1	19	162,134
Karnes	16	0	0	16	98,883
Lavaca	8	1	2	5	57,079
Live Oak	32	5	2	25	174,240
Refugio	27	2	5	20	184,068
Victoria	37	1	7	29	227,626
Wilson	14	2	0	12	60,607
Total	239	35	25	179	1,503,145

TEXAS GULF COAST (District 2)

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Albert West	2	0	2	0	14,760
Anaqua	2	0	0	2	11,656
Belknap	4	4	0	0	28,536
Bloomington	86	83	0	3	422,254
Bonnie View	3	2	0	1	15,367
Boyce	9	8	0	1	59,143
Brandt	8	6	0	2	53,720
Burnell-Wilcox	18	17	1	0	124,352
Cabeza Creek-Pettus	3	3	0	0	13,466
Charco	3	0	0	3	14,371
Coletto Creek	27	21	1	5	117,825
East Long Mott	7	5	0	2	58,953
Falls City	4	4	0	0	23,046
Gottschalt	8	7	1	0	62,922
Greta	3	2	1	0	15,492
Holly	8	8	0	0	61,807
Holzmark	2	2	0	0	16,190
Hord's Creek-Wilcox	17	8	3	6	98,765
LaSalle	2	1	0	1	10,106
Little Kentucky	4	2	0	2	23,261
Lolita	10	4	1	5	79,571
Matagorda Bay	6	4	0	2	32,395
North McFaddin	2	0	1	1	11,920
North Pettus-Wilcox	8	2	6	0	62,358
Oakville-Wilcox	2	1	0	1	10,095
Placedo	3	2	1	0	16,987
Porter (North)	2	2	0	0	8,134
Porter (South)	8	3	0	5	33,509
Pridham Lake	12	9	0	3	56,095
Provident City-Yegua	4	2	1	1	29,840
Refugio (new)	2	2	0	0	12,430
Refugio (old)	1	0	0	1	6,807
Refugio-Fox	16	7	2	7	92,414
Refugio-Heard	18	16	1	1	104,806
Refugio-Hynes	1	1	0	0	6,572
Roche	19	19	0	0	129,958
Sandy Creek	9	6	0	3	49,782
Sheriff	2	1	0	1	13,141
South Blanconia	5	2	0	3	26,928
South Coletto Creek	7	5	1	1	34,488
Tom O'Connor	32	32	0	0	198,678
Tulsita-Pettus	3	1	0	2	10,890
Tulsita-Wilcox	6	6	0	0	43,373
West Cosden	6	4	1	1	40,878
West Cosden-Mackhank	14	14	0	0	103,591
West Cosden-Wilcox	3	3	0	0	21,595
West Pridham Lake	4	0	1	3	16,021
West Ranch	17	16	1	0	110,911
Wyrick	6	4	0	2	31,882
Yoward	8	7	0	1	60,250
Miscellaneous	46	18	11	17	259,321
Total	502	376	37	89	2,961,522

TEXAS GULF COAST (District 3)

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	31	2	2	27	224,399
February	18	5	0	13	149,489
March	27	7	0	20	212,904
April	24	5	0	19	175,566
May	20	4	0	16	152,936
June	28	3	1	24	195,784
July	37	10	3	24	269,370
August	32	5	4	23	247,009
September	40	8	0	32	284,966
October	24	5	1	18	171,225
November	25	5	2	18	193,611
December	34	7	1	26	250,770
Total	340	66	14	260	2,528,029

TEXAS GULF COAST (District 3)

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	59	41	7	11	392,335
February	43	30	1	12	264,557
March	48	32	3	13	326,147
April	63	43	1	19	380,640
May	64	50	2	12	406,297
June	60	40	9	11	353,410
July	84	62	8	14	491,735
August	68	52	4	12	341,970
September	89	59	8	22	530,116
October	68	50	6	12	442,973
November	85	66	1	18	543,575
December	84	55	7	22	529,058
Total	815	580	57	178	5,002,813

TEXAS GULF COAST (District 3)

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	90	43	9	38	616,734
February	61	35	1	25	414,046
March	75	39	3	33	539,051
April	87	48	1	38	556,206
May	84	54	2	28	559,233
June	88	43	10	35	549,194
July	121	72	11	38	761,105
August	100	57	8	35	588,979
September	129	67	8	54	815,082
October	92	55	7	30	614,198
November	110	71	3	36	737,186
December	118	62	8	48	779,828
Total	1,155	646	71	*438	7,530,842

*Includes 4 service wells.

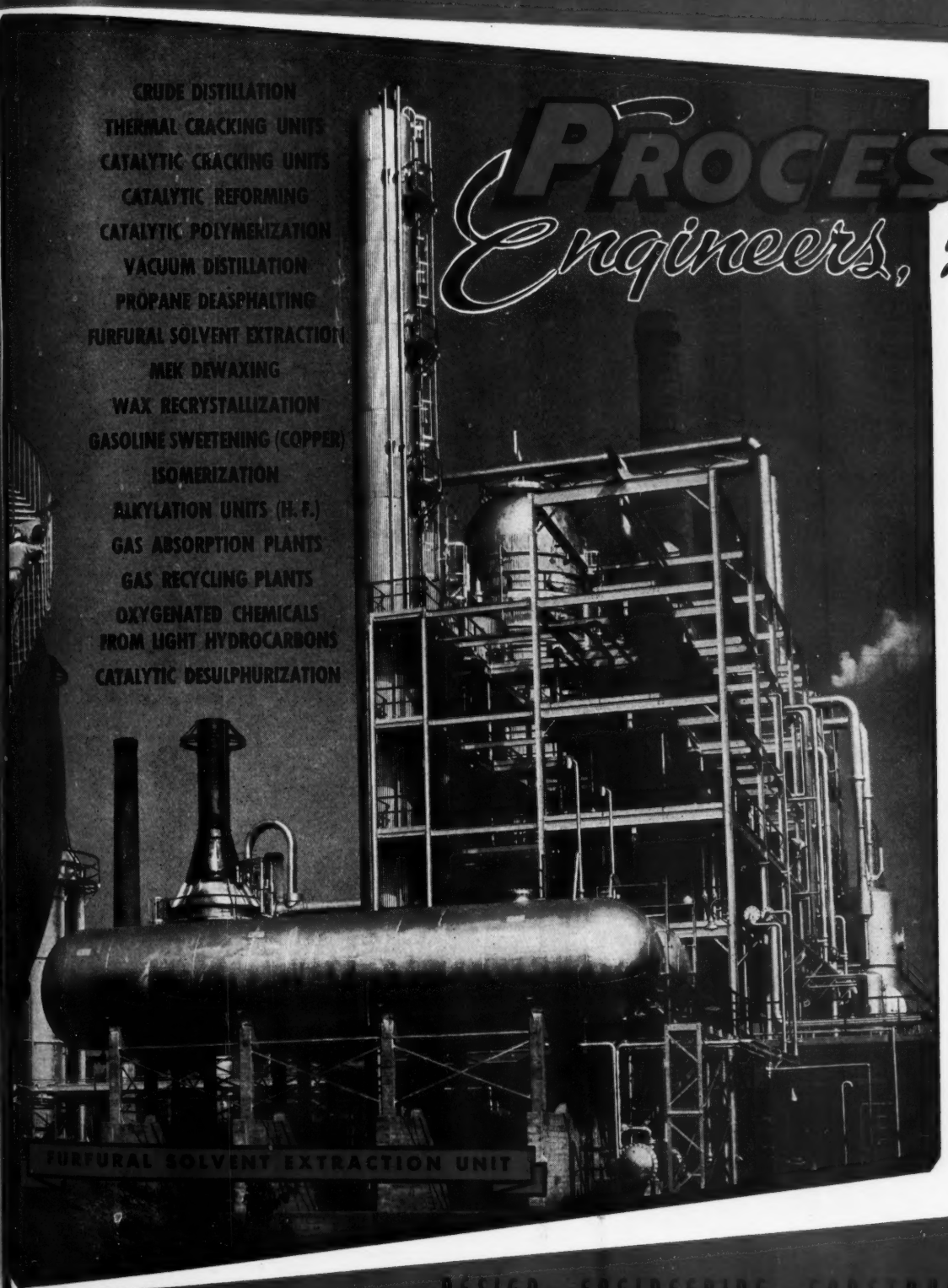
TEXAS GULF COAST (District 3)

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Austin	5	1	0	4	48,373
Brazoria	40	5	1	34	320,639
Burleson	2	0	0	2	6,607
Chambers	20	4	0	16	178,720
Colorado	2	1	0	1	19,205
Fayette	11	0	0	11	53,854
Fort Bend	21	1	1	19	145,937
Galveston	6	1	0	5	50,188
Grimes	2	0	0	2	11,340
Hardin	11	7	3	1	83,074
Harris	36	11	1	24	260,103
Jasper	1	1	0	0	8,350
Jefferson	23	3	1	19	198,207
Lee	8	1	0	7	52,749
Liberty	20	8	2	10	156,471
Madison	1	1	0	0	2,500
Matagorda	23	3	0	20	176,188
Montgomery	9	1	0	8	54,229
Newton	7	5	0	2	56,093
Orange	14	3	0	11	121,686
Polk	2	0	0	2	11,060
San Jacinto	15	0	0	15	103,002
Trinity	2	1	0	1	22,264
Tyler	1	1	0	0	10,000
Walker	5	0	0	5	23,198
Waller	2	0	0	2	15,530

CRUDE DISTILLATION
THERMAL CRACKING UNITS
CATALYTIC CRACKING UNITS
CATALYTIC REFORMING
CATALYTIC POLYMERIZATION
VACUUM DISTILLATION
PROPANE DEASPHALTING
FURFURAL SOLVENT EXTRACTION
MEK DEWAXING
WAX RECRYSTALLIZATION
GASOLINE SWEETENING (COPPER)
ISOMERIZATION
ALKYLATION UNITS (H. F.)
GAS ABSORPTION PLANTS
GAS RECYCLING PLANTS
OXYGENATED CHEMICALS
FROM LIGHT HYDROCARBONS
CATALYTIC DESULPHURIZATION

PROCESS Engineers, Inc.



FURFURAL SOLVENT EXTRACTION UNIT

DESIGN—ENGINEERING—CONSTRUCTION
FOR PETROLEUM REFINING—GAS—PETRO-CHEMICALS

PROCESS ENGINEERS' Engineering Division is staffed with competent process engineers and designers to cover all phases of refinery design and engineering, procurement of materials and erection supervision. Our services include the design and construction of natural gasoline absorption plants, gas recycling and repressuring plants, appraisals, reports and consulting services on operating problems of refineries and natural gasoline plants. The Petro-chemical Division can offer oxygenated chemicals produced from light hydrocarbons.

5625 DANIELS—DALLAS, TEXAS

ABOVE

REGARDLESS OF WHERE THE DIFFERENTIAL OCCURS . . . YOU GET A *Positive Seal*

BELOW

WITH THE

WILSON

"Positive Seal"

HOOK WALL PACKER

When you eliminate leaks caused by the Hydrostatic Head being greater than the bottom hole pressure, you eliminate the cause of many packer failures.

That's what a Wilson "Positive Seal" Hook Wall Packer does. If the Differential is above, the rubber element is pressed against the seat, assuring a tighter seal-off. If the Differential is below, the patented split pack-off of the rubber element gives a "Lip-Seal"—the greater the pressure, the tighter the seal.

In any specified standard pipe size, one Packing element fits all weights of pipe. Contact your nearest supply store or write for complete information on this outstanding Wilson product.

• NOW SOLD by Supply Stores Everywhere •

Manufactured by:

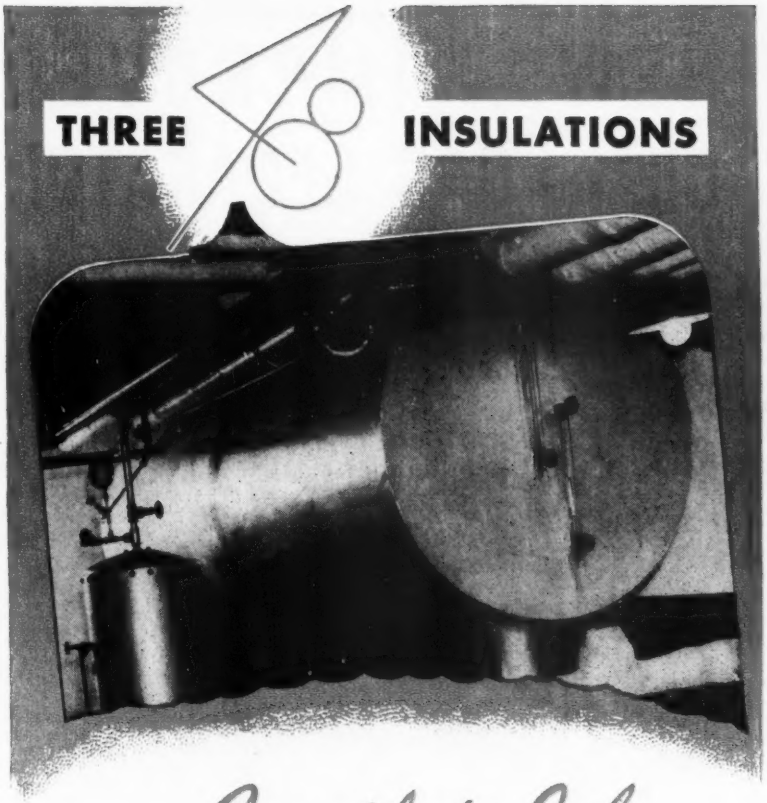
WILSON FOUNDRY & MACHINE CO.

P. O. BOX 1922—HOUSTON 10, TEXAS

County—	Comp.	Oil	Gas	Dry	Footage
Washington	4	0	0	4	32,008
Wharton	47	7	5	35	306,454
Total	340	66	14	260	2,528,029

TEXAS GULF COAST
(District 3)
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Anahuac	3	1	1	1	26,675
Angleton	2	2	0	0	21,138
Arch	2	0	0	2	15,575
Arriola	2	1	0	1	7,998
Barber's Hill	3	1	0	2	16,344
Batson	16	14	0	2	60,084
Blue Basin	2	0	2	0	11,578
Blue Lake	3	3	0	0	33,229
Blue Ridge	7	3	0	4	32,820
Boling	33	22	1	10	146,914
Cedar Point	7	6	1	0	40,281
Chenango	3	3	0	0	24,482
Chocolate Bayou	22	20	1	1	222,321
College Port	9	0	8	1	40,218
Conroe	8	4	0	4	41,931
Danbury	11	4	2	5	75,996
Day	4	1	0	3	9,978
Dyersdale	16	13	2	1	65,178
East Bay City	2	1	1	0	20,790
Esperson	8	7	0	1	73,325
Fannett	4	4	0	0	29,300
Gillock	3	2	0	1	28,464
Gist	4	4	0	0	28,822
Goose Creek	30	28	0	2	137,932
Hankamer	4	4	0	0	24,039
High Island	13	12	0	1	91,241
Hitchcock	3	3	0	0	20,094
Hockley	2	2	0	0	7,562
Hull	18	16	0	2	97,145
Humble	67	54	1	12	242,965
Hutchins-Kubela	12	8	3	1	58,298
Jackson Pasture	5	4	0	1	43,087
Jergins	11	10	0	1	71,638
Katy	7	2	4	1	49,686
Kirby	2	1	0	1	14,371
LaBelle	3	2	0	1	28,551
Lane City Townsite	3	2	0	1	17,197
League City	2	1	0	1	20,860
Livingston	3	3	0	0	18,524
Lochridge	2	1	0	1	12,795
McCoy	7	4	1	2	65,132
Manvel	5	2	0	3	27,908
Markham	16	7	0	9	39,259
Midfields	12	10	0	2	109,249
Nada	2	1	0	1	15,587
Needville	9	2	4	3	56,956
North Bay City	8	7	1	0	72,406
North Beech Creek	2	1	0	1	12,678
North Cleveland	14	12	1	1	87,844
North Houston	3	3	0	0	21,098
North Katy	7	7	0	0	48,395
North Markham	4	3	0	1	33,901
North Port Neches	6	6	0	0	52,812
North Thompson	4	1	0	3	33,602
North Winnie	5	5	0	0	52,960
Old Ocean	13	13	0	0	140,712
Orange Hill	3	2	1	0	27,940
Oyster Bayou	4	3	0	1	33,479
Pickett Ridge	2	1	0	1	9,515
Pierce Junction	19	12	0	7	117,847
Pinehurst	6	4	0	2	66,845
Pledger	2	2	0	0	13,896
Port Neches	5	4	0	1	29,322
Raccoon Bend	5	2	0	3	24,915
Rankin	2	1	0	1	18,030
Red Fish Reef	3	3	0	0	31,395
Sabine Tram	3	2	0	1	26,071
San Jacinto	2	1	0	1	17,318
Saratoga	20	18	0	2	66,013
Sour Lake	51	38	0	13	137,866
South Chenango	4	4	0	0	37,000
South Gillock	10	10	0	0	91,373
South Hutchins	4	1	2	1	23,581
South Liberty	16	11	0	5	95,427
South Mayes	3	3	0	0	30,014
Spanish Camp	7	0	7	0	22,846
Spindletop	10	7	0	3	11,700
Stratton Ridge	3	3	0	0	13,954
Sublime	2	2	0	0	19,004
Sugarland	8	6	0	2	35,856
Sugar Valley	40	36	1	3	397,777
Tide Haven	4	4	0	0	36,358
Twin Basin	3	1	1	1	21,639
West Columbia	17	10	1	6	96,256
West Conroe	7	4	0	3	33,484



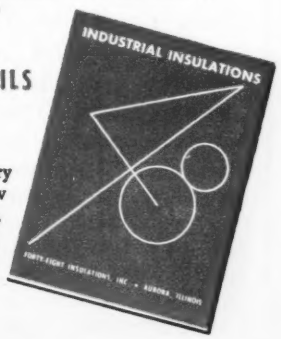
DO A *Complete Job*
ON **STORAGE TANKS**

To keep heat in and moisture away from heated storage tanks—high or low temperature—three Forty-Eight Insulations do a complete, permanent job:

- 1st—"48" Waterproof Insulating Block next to tank metal. Types available for temperatures up to 2,000° F. insulating protection.
- 2nd—"48" Hi-Glos Finishing Cement, ¼-inch coverage is usually enough! On extremely high temperature applications, Weber's "48" Insulating Cement under the Finishing Cement adds thermal protection for lower heat losses.
- 3rd—"48" Weatherproof Paint seals moisture out; provides a clean, neat finish that *lasts,* indoors or out.

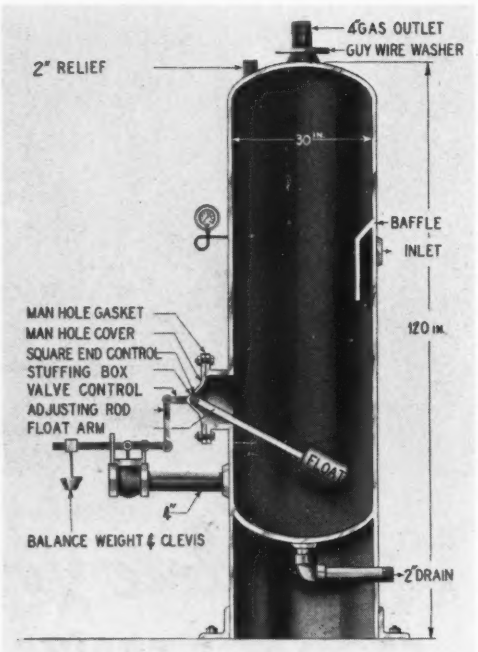
THIS CATALOG CONTAINS DETAILS ON ALL 48 INSULATIONS

There are types of "48" Insulations for every industrial insulating purpose... high and low temperature cement, blocks, pipe-coverings, paints and loose mineral wool. This catalog illustrates and describes them in detail. Copy sent promptly on request. No obligation.



FORTY-EIGHT INSULATIONS
INCORPORATED
AURORA, ILLINOIS

NEW AND IMPROVED OIL AND GAS SEPARATOR



For low initial cost and trouble-free upkeep, standardize on Westerman Bros. Separators. There are over 500 of these separators giving trouble-free service in oil fields around the world.

Built to API - ASME - Code specifications with an expansion design baffle plate which gives more complete, efficient separation. The large unobstructed gas chamber results in drier gas and more oil saved. The simplicity of all parts facilitates maintenance and saves costly replacements.

Quality has been our trademark for over 40 years.

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MANUFACTURERS OF

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Bull Wheel Spools
Bull Wheel Shells
Electric Welding
Derrick Forges
Smoke Stacks
Tank Repairs
Steel Tanks
Slack Tubs
Tool Boxes

Complete catalog and price list upon request.
Domestic and Foreign inquiries invited.

WESTERMAN BROS. BOILER AND TANK WORKS
BREMEN, OHIO, U.S.A. **TELEPHONE 95-R2**

Field—	Comp.	Oil	Gas	Dry	Footage
West Madisonville	2	1	0	1	4,887
West Orange	10	6	0	4	68,080
West Village Mills	3	0	1	2	22,220
Miscellaneous	57	25	9	23	420,980
Total	815	580	57	178	5,002,813

SOUTHWEST TEXAS
(District 1)
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	16	0	0	16	37,700
February	12	1	0	11	40,951
March	14	0	0	14	38,305
April	17	0	1	16	54,138
May	13	1	0	12	20,036
June	16	0	0	16	51,904
July	26	0	0	26	67,332
August	10	0	0	10	28,873
September	16	3	0	13	60,061
October	17	1	0	16	51,685
November	18	1	0	17	37,727
December	22	4	0	18	61,412
Total	197	11	1	185	550,124

SOUTHWEST TEXAS
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	33	25	1	7	115,591
February	20	18	0	2	85,280
March	24	23	0	1	86,421
April	27	23	0	4	99,378
May	22	16	0	6	72,192
June	18	14	1	3	66,344
July	32	26	0	6	93,840
August	18	14	1	3	81,213
September	46	41	0	5	85,749
October	28	26	1	1	87,538
November	17	11	0	6	44,093
December	30	28	0	2	99,556
Total	315	265	4	46	1,017,195

SOUTHWEST TEXAS
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	49	25	1	23	153,291
February	32	19	0	13	126,231
March	38	23	0	15	124,726
April	44	23	1	20	153,516
May	35	17	0	18	92,228
June	34	14	1	19	118,248
July	58	26	0	32	161,172
August	28	14	1	13	110,086
September	62	44	0	18	145,810
October	45	27	1	17	139,223
November	35	12	0	23	81,820
December	52	32	0	20	160,968
Total	512	276	5	*231	1,567,219

*Includes 3 service wells.

SOUTHWEST TEXAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Atascosa	18	2	0	16	75,506
Bastrop	15	1	0	14	35,700
Bexar	12	0	0	12	28,453
Caldwell	18	1	0	17	41,810
Dimmit	3	1	0	2	15,071
Edwards	21	1	0	20	17,943
Frio	11	1	0	10	57,278
Gillespie	2	0	0	2	1,514
Guadalupe	12	1	0	11	20,415
Hays	3	0	0	3	4,068
Kinney	2	0	0	2	6,407
LaSalle	6	0	0	6	36,313
McMullen	21	2	1	18	94,011
Medina	5	0	0	5	5,733
Milam	14	1	0	13	35,211
Travis	5	0	0	5	7,080
Uvalde	2	0	0	2	3,142
Val Verde	2	0	0	2	4,741
Williamson	16	0	0	16	25,755
Zavala	9	0	0	9	32,973
Total	197	11	1	185	550,124

SOUTHWEST TEXAS
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Buchanan	2	0	0	2	4,410

Field—	Comp.	Oil	Gas	Dry	Footage
Calliham	2	1	0	1	2,121
Charlotte	120	118	0	2	632,974
Darst Creek	4	2	0	2	10,368
East Imogene	3	2	0	1	24,452
Elm Creek	10	8	0	2	7,868
Gas Ridge	38	38	0	0	19,058
Holman	9	2	0	7	5,919
Jacob	8	7	0	1	7,932
Jim Smith	4	1	0	3	5,490
Joliet	15	10	0	5	33,461
Jolley (Larremore)	8	7	0	1	11,221
Jourdanton	11	11	0	0	81,374
Lavernia	2	2	0	0	1,713
Little Alamo	2	2	0	0	4,526
Luling-Branyon	13	11	0	2	31,613
Lytton Springs	2	2	0	0	3,876
Minerva-Rockdale	5	2	0	3	5,249
North Cedar Creek	2	0	0	2	3,738
Pearsall	4	4	0	0	20,951
Salt Flats	2	2	0	0	5,324
San Caja	2	1	1	0	14,636
San Jose	7	5	0	2	9,106
South Campana	2	1	0	1	6,105
Walnut Creek	3	2	0	1	4,779
Wardlaw	14	11	0	3	6,079
Weigang	3	3	0	0	11,480
Miscellaneous	18	10	3	5	41,372
Total	315	265	4	46	1,017,195

SOUTHWEST TEXAS
(District 4)
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	34	2	3	29	167,618
February	31	4	5	22	168,887
March	27	3	5	19	161,571
April	48	7	8	33	224,081
May	34	5	2	27	200,015
June	33	2	4	27	159,568
July	30	8	2	20	172,569
August	45	3	4	38	235,073
September	36	9	0	27	210,050
October	31	4	0	27	137,725
November	28	2	4	22	137,214
December	46	1	2	43	204,221
Total	423	50	39	334	2,178,592

SOUTHWEST TEXAS
(District 4)
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	70	48	4	18	370,214
February	64	46	2	16	318,242
March	59	45	3	11	320,276
April	97	71	4	22	479,572
May	76	52	4	20	340,163
June	74	56	5	13	320,593
July	87	56	10	21	419,830
August	79	63	1	15	377,343
September	114	87	3	24	498,866
October	83	55	3	25	387,658
November	104	77	7	20	493,549
December	115	82	8	25	502,425
Total	1,022	738	54	230	4,828,731

SOUTHWEST TEXAS
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	104	50	7	47	537,832
February	95	50	7	38	487,129
March	86	48	8	30	481,847
April	145	78	12	55	703,653
May	110	57	6	47	540,178
June	107	58	9	40	480,161
July	117	64	12	41	592,399
August	124	66	5	53	612,416
September	150	96	3	51	708,916
October	114	59	3	52	525,383
November	132	79	11	42	630,763
December	161	83	10	68	706,646
Total	1,445	788	93	*564	7,007,323

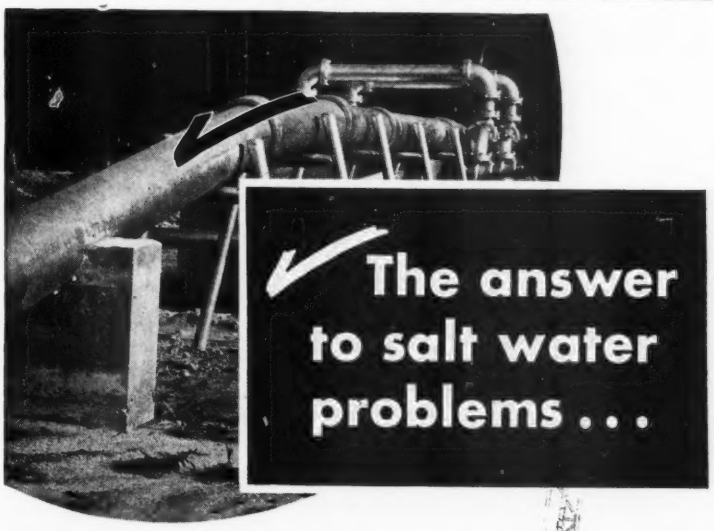
*Includes 22 service wells.

SOUTHWEST TEXAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Aransas	6	3	2	1	45,165
Brooks	13	2	2	9	105,611
Cameron	4	0	0	4	41,095
Duval	99	13	8	78	411,837
Hidalgo	15	3	2	10	117,177
Jim Hogg	33	2	0	31	120,726
Jim Wells	33	5	6	22	195,642
Kenedy	8	0	2	6	60,243
Kleberg	7	1	0	6	50,292
Nueces	37	6	4	27	289,345
San Patricio	34	4	5	25	217,099
Starr	54	10	7	37	271,336
Webb	47	1	1	45	120,291
Willacy	9	0	0	9	84,242
Zapata	24	0	0	24	48,491
Total	423	50	39	334	2,178,592

SOUTHWEST TEXAS
(District 4)
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Agua Dulce	31	19	3	9	204,722
Agua Prieta	5	3	0	2	22,935
Akin	3	1	2	0	7,712
Arrowhead	5	4	0	1	30,063
Aviators	3	2	0	1	5,338
Bishop	15	12	0	3	110,392
Borregas	25	25	0	0	181,223
Boyle	3	2	0	1	13,230
Cam	19	15	1	3	50,871
Charamousca	2	1	0	1	2,994
Coastal	7	3	0	4	38,829
Colmena	15	14	0	1	21,382
Conoco-Driscoll	9	9	0	0	25,319
Dee Davenport	2	2	0	0	8,512
Dulup	11	7	1	3	20,517
East Charco-Redondo	8	5	0	3	13,503
East Flour Bluff	3	2	0	1	20,666
East Premont	5	4	0	1	25,935
East Taft	22	21	0	1	123,850
East White Point	8	4	1	3	54,334
Escobas	15	7	0	8	19,193
Farenthold	16	14	2	0	98,882
Flour Bluff	3	3	0	0	20,134
Fulton Beach	15	14	0	1	103,201
Gyp Hill	4	2	0	2	29,629
Hoffman	100	94	0	6	245,385
Hughes	3	1	0	2	5,548
Jay Simmons	8	5	0	3	52,011
Jos Moss	8	7	0	1	6,052
Kelsey-Deep	27	23	1	3	170,360



TRANSITE Asbestos-Cement PIPE curbs corrosion inside and outside

TRANSITE PIPE provides salt-water disposal lines that oil men know will give them years of dependable service. Made of asbestos and cement, it withstands the corrosive action of salt water on the inside, corrosive soil on the outside . . . holds costly replacement to a minimum.

Transite has other advantages, too. Its factory-made Simplex Couplings speed assembly . . . provide joints that *stay* tight in service. Flexible, they permit laying the pipe around curves without special fittings. Light in weight, Transite is easily handled . . . most sizes can be unloaded and lowered into the trench without mechanical handling equipment.

Use Transite Pipe to save on installation . . . to reduce maintenance . . . to eliminate frequent costly pipe replacements on your salt-water disposal lines. For all the facts, write Johns-Manville, Box 290, New York 16, New York.

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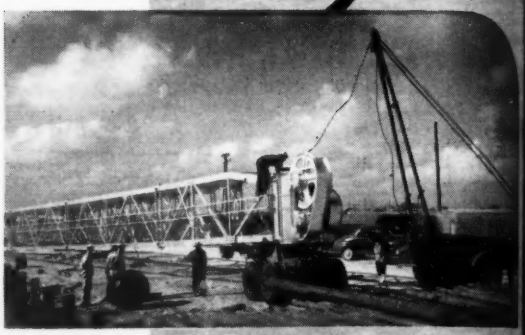
Johns-Manville
TRANSITE PRESSURE PIPE

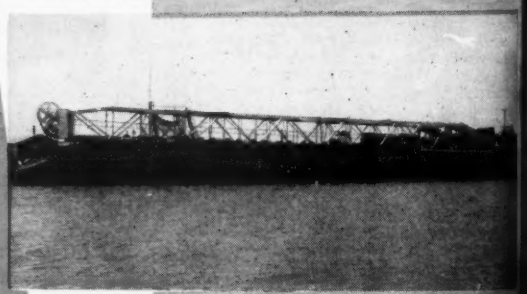
LEE C. Moore Specialized

1. Lee C. Moore "Jackknife" Cantilever Masts being placed on trucks from assembly point on beach.

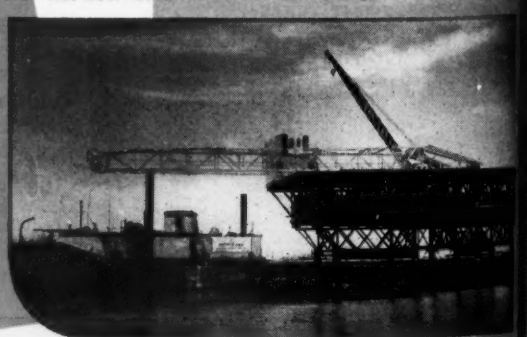


2. Mast has been rolled to dock ready to be pulled on sea-going barge.

3. Mast in one section, being placed on barge for its trip to location.



4. The mast is now ready for its trip to foundation which has been constructed far from shore.



5. Mast is now prone on sub-structure prior to being raised.

LEE C. MOORE

TULSA • DALLAS • HOUSTON • MIDLAND

Export Office

EQUIPMENT

FOR DEEP WATER DRILLING...

Experienced engineering is needed for the specialized field of deep water drilling. These pictures show how Lee C. Moore structures are meeting this challenge. Lee C. Moore masts, derricks and sub-structures have proved their value in actual operation on deep water locations.

6. Mast is secured in place and rigged for operation.

7. Drilling operations are under way; pipe in rack. Mast will stand an indicated wind load of 70 MPH.

CORPORATION

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Home Office: 50 Church Street, New York 7, N. Y.

LEE C. Moore

Field—	Comp.	Oil	Gas	Dry	Footage
Kennard	8	1	0	7	35,884
Kohler	5	2	1	2	13,341
La Blanca	3	0	2	1	27,220
Lacy	3	1	1	1	23,019
La Gloria	73	63	3	7	523,515
Lamar	3	1	0	2	23,115
La Reforma	6	1	3	2	43,916
Los Indios	3	0	3	0	21,654
Luby	5	5	0	0	34,593
Lundell	17	15	0	2	25,768
Mantor-Briggs	2	1	0	1	12,674
Midway	7	5	1	1	44,443
Minnie Bock	2	2	0	0	13,248
Morgan	3	1	0	2	21,963
New Angelita	3	1	0	2	23,847
Nicholson	2	1	0	1	14,768
North Albercas	6	3	0	3	14,207
North Aviator	10	5	0	5	19,675
North Government Wells	25	17	1	7	40,041
North Magnolia City	2	1	0	1	9,334
North Minnie Bock	7	3	1	3	47,888
North Rincon	6	1	1	4	27,492
North Sun	2	1	0	1	14,925
Odem	2	2	0	0	13,689
Pantex	9	6	0	3	23,953
Piedras Pintas	23	10	1	12	72,087
Plymouth	6	6	0	0	39,420
Poquita Creek	4	4	0	0	10,300
Premont	5	4	1	0	20,794
Quien Sabe	23	21	0	2	55,897
Randado	2	2	0	0	2,546
Richard King	2	1	1	0	10,397
Rincon	9	6	0	3	41,445
Robstown	11	7	0	4	56,667
Round Lake	2	1	0	1	12,059
San Pablo	28	28	0	0	108,441
Saxet-Deep	3	1	1	1	23,829
Seeligson	49	43	2	4	310,038
Sejita	2	0	1	1	11,741
Semmes	2	1	0	1	5,003
Seven Sisters	20	16	1	3	49,262
South Armstrong	4	2	1	1	12,943
South Haldeman	11	8	0	3	62,451
South Longhorn	7	3	1	3	35,231
Squire	13	10	1	2	48,597
Stratton	30	27	0	3	208,832
Sun	2	2	0	0	9,434
Tijerina-Canales	22	17	2	3	163,278
Tom Graham	3	1	1	1	17,117
Vaello	3	1	0	2	16,421
Watkins	2	1	1	0	1,784
West Sinton	37	25	0	12	121,758
Willamar	15	8	0	7	120,609
Miscellaneous	68	18	11	39	333,456
Total	1,022	738	54	230	4,828,731

SPECIALIZATION!

SKILLED WORKMEN . . .
EXCELLENT EQUIPMENT . . .
EXPERT SERVICE . . .
ON
A. P. I. ALL-WELDED
OIL STORAGE TANKS

As contractors on steel tank erection, field fabrication, repairs and dismantling, Sapulpa Tank Company's adequate, modern facilities offer more economical tank jobs of higher quality. Our substantial savings in overhead are reflected in savings for our customers. Let us offer a quotation on your next tank requirement.

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SAPULPA TANK COMPANY
TANK CONTRACTORS
P. O. BOX 218 SAPULPA, OKLAHOMA
BRANCH OFFICE, FT. WORTH, TEXAS

EAST TEXAS
(Districts 5 and 6)
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	21	1	0	20	100,135
February	11	0	0	11	63,364
March	7	1	0	6	40,603
April	11	1	0	10	60,567
May	7	1	0	6	23,353
June	10	1	0	9	50,849
July	9	1	0	8	54,251
August	10	3	0	7	59,736
September	14	1	0	13	65,844
October	16	3	0	13	73,830
November	9	0	0	9	54,344
December	17	0	1	16	86,205
Total	142	13	1	128	733,081

EAST TEXAS
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	36	24	7	5	210,954
February	23	19	3	1	138,036
March	42	30	5	7	257,233
April	30	15	7	8	157,455
May	21	18	1	2	98,465
June	35	22	6	7	204,455
July	51	29	9	13	281,473
August	37	25	5	7	187,262
September	53	32	10	11	275,375
October	45	30	4	11	257,067
November	42	27	7	8	209,428
December	74	55	12	7	372,742
Total	489	326	76	87	2,649,945

EAST TEXAS
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	57	25	7	25	311,089
February	34	19	3	12	201,400
March	49	31	5	13	297,836
April	41	16	7	18	218,022
May	28	19	1	8	121,818
June	45	23	6	16	255,304
July	60	30	9	21	335,724
August	47	28	5	14	246,998
September	67	33	10	24	341,219
October	61	33	4	24	330,897
November	51	27	7	17	263,772
December	91	55	13	23	458,947
Total	631	339	77	*215	3,383,026

*Includes 2 service wells.

EAST TEXAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Anderson	10	2	0	8	58,617
Angelina	4	0	0	4	21,713
Bosque	1	0	0	1	8,000
Bowie	1	0	0	1	8,085
Camp	1	0	0	1	3,822
Cass	5	0	0	5	35,407
Cherokee	11	0	0	11	59,492
Collins	1	0	0	1	2,810
Denton	6	0	0	6	13,214
Ellis	1	0	0	1	3,135
Falls	5	0	0	5	17,465
Fannin	1	0	0	1	4,038
Franklin	1	0	0	1	4,505
Freestone	1	0	0	1	8,198
Grayson	7	3	0	4	25,638
Harrison	1	0	0	1	6,504
Henderson	6	0	0	6	45,963
Hill	1	0	0	1	6,700
Hopkins	7	1	0	6	39,632
Houston	3	1	0	2	21,615
Hunt	1	0	0	1	4,808
Kaufman	8	1	0	7	35,614

MERCOID

OFFERS A LINE OF DEPENDABLE CONTROLS FOR VARIOUS INDUSTRIAL REQUIREMENTS

THE ONLY 100% MERCURY SWITCH EQUIPPED CONTROLS. THEY ASSURE ACCURACY, BETTER PERFORMANCE AND LONGER CONTROL LIFE.

Wherever the control of temperature, pressure, liquid level or mechanical operations are involved, Mercoid Controls and Switches assure a maximum in efficient and dependable performance.

PRESSURE CONTROLS

Available for numerous industrial applications. They are equipped with Bourdon tubes and have outside double adjustments which eliminate guesswork when setting controls. Indicators show the operating range on the calibrated dial.

REMOTE STEM TEMPERATURE CONTROLS

For control of liquids or gases, such as air, oil, water, paraffin, glue or distillate vapors and many other industrial applications. A heavy gauge Bourdon tube is employed which is actuated by the expansion of volatile liquid within the remote bulb. The control is equipped with convenient outside double adjustments.

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Mercoid lever arm controls have a variety of applications where it is desired to mechanically open and close electric circuits Mercoid float controls are used for maintaining fluid levels in tanks or for control of sump pumps or cellar drainers.

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The No. 855 thermostat is used for line voltage applications where it is desired to handle the full motor load directly without the use of a relay. Available with "on-off" manual switch for unit heater applications. These thermostats are used for both heating and refrigeration applications.

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Type V is a reliable low voltage mercury contact relay which also acts as a transformer inducing low voltage (24 volts) on the pilot circuit. There is no hum or chatter. Used for all types of automatic equipment. Available in various voltages, cycles and circuits.

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Mercoid brand switches are noted for their superior operating qualities. Various types available.

MERCOID CONTROLS are available in a variety of types for sensitive control of Pressure, Temperature and Lever actuation.

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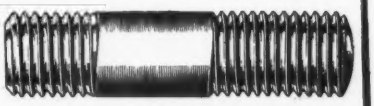
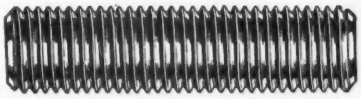
Tap end studs are threaded for steam fit on tap end; on nut end, A.N. Coarse thread—Classes 2, 3, or 7 fits. Double end and Continuous threaded studs are threaded Classes 2, 3, or 7 fits, unless otherwise specified. Diameters from ½" to 2½". Lengths to suit.



● TAP END STUD

● DOUBLE END STUD



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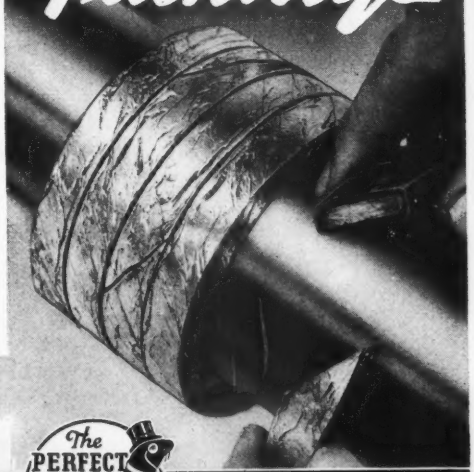

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MANUFACTURERS OF METALLIC and SEMI-METALLIC PACKINGS
ROTARY MECHANICAL SEALS and PACKING TOOLS

County—	Comp.	Oil	Gas	Dry	Footage
Lamar	3	0	0	3	8,428
Leon	5	0	0	5	36,316
Limestone	7	0	0	7	23,053
McLennan	2	0	0	2	2,236
Marion	2	0	0	2	10,168
Nacogdoches	1	0	1	0	7,861
Navarro	7	0	0	7	21,583
Panola	2	1	0	1	13,233
Red River	2	0	0	2	8,668
Robertson	4	0	0	4	11,105
Rusk	2	0	0	2	15,489
Sabine	1	0	0	1	8,640
San Augustine	1	0	0	1	9,017
Shelby	2	1	0	1	20,807
Smith	2	1	0	1	18,441
Trinity	1	0	0	1	10,259
Upshur	4	0	0	4	18,053
Van Zandt	3	0	0	3	15,610
Wood	8	2	0	6	39,139
Total	142	13	1	128	733,081

EAST TEXAS
(Districts 5 and 6)
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Alba	8	7	0	1	35,512
Bethany	7	1	4	2	44,534
Blackfoot Rodessa	7	6	0	1	69,561
Bolivar	11	8	0	3	17,996
Calvert	6	6	0	0	13,390
Carthage	48	7	38	3	308,477
Cayuga	9	7	2	0	43,846
Coke	26	26	0	0	107,978
Como	23	20	0	3	97,129
Grapeland	10	9	0	1	61,045
Hawkins	13	10	0	3	65,010
Henderson	7	5	1	1	51,118
Huxley	4	0	1	3	30,573
LaRue	3	2	0	1	24,728
Long Lake	4	1	2	1	21,396
Longwood	6	4	1	1	33,957
Manziel	3	3	0	0	13,065
Merrigale-Paul	52	49	0	3	254,035
Mitchell Creek	4	4	0	0	18,372
Oakwood	6	2	4	0	35,762
Opelika	11	11	0	0	99,715
Pickton	9	9	0	0	71,397
Quitman	30	25	0	5	138,316
Rodessa	12	7	4	1	85,880
Sand Flat	10	9	0	1	76,300
Sherman	34	31	0	3	147,900
Tri-Cities	21	17	1	3	174,594
Van Shallow	4	4	0	0	8,289
Waskom	7	3	4	0	39,532
Whelan	4	1	2	1	30,707
Wise	3	1	0	2	15,493
Yantis	20	16	0	4	84,780
Yantis (deep)	1	1	0	0	8,250
Other fields	66	14	12	40	321,308
Total	489	326	76	87	2,649,945

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NORTH CENTRAL TEXAS
(District 9)
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	41	6	0	35	137,040
February	19	3	1	15	72,046
March	24	4	0	20	89,232
April	29	2	0	27	96,669
May	40	6	0	34	140,350
June	30	2	1	27	93,960
July	53	7	0	46	192,121
August	40	5	0	35	114,121
September	44	3	0	41	138,989
October	41	4	0	37	126,970
November	28	6	0	22	118,863
December	40	5	1	34	147,629
Total	429	53	3	373	1,467,990

NORTH CENTRAL TEXAS
(District 9)
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	132	76	0	56	383,858
February	99	64	2	33	290,420
March	157	104	1	52	446,908
April	158	99	0	59	427,407
May	178	98	0	80	451,138
June	130	82	0	48	348,048
July	210	126	2	82	550,098
August	175	111	1	63	519,223
September	180	108	1	71	530,963
October	139	85	0	54	382,561
November	154	98	0	56	381,836
December	243	117	2	124	577,213
Total	1,955	1,168	9	778	5,289,685

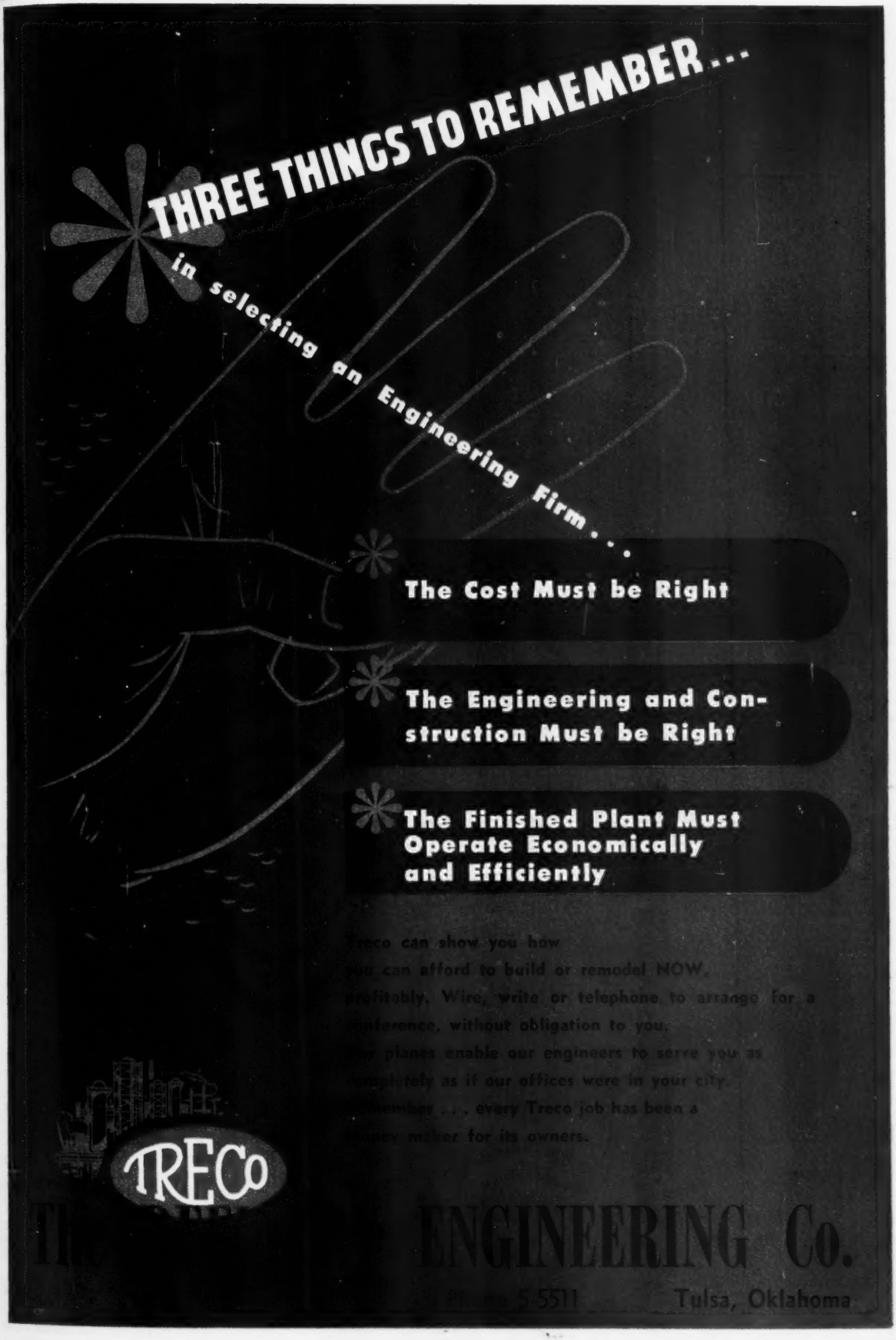
NORTH CENTRAL TEXAS
(District 9)
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	173	82	0	91	520,898
February	118	67	3	48	362,466
March	181	108	1	72	536,140
April	187	101	0	86	524,076
May	218	104	0	114	591,488
June	160	84	1	75	442,008
July	263	133	2	128	742,211
August	215	116	1	98	633,344
September	224	111	1	112	669,972
October	180	89	0	91	509,531
November	182	104	0	78	500,699
December	283	122	3	158	724,842
Total	2,384	1,221	12	*1151	6,757,675

*Includes 23 service wells.

NORTH CENTRAL TEXAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Archer	122	14	0	108	362,088
Baylor	16	0	0	16	53,037
Clay	29	3	1	25	140,200
Cooke	74	3	0	71	179,511
Cottle	1	0	0	1	6,656
Foard	2	0	0	2	10,416
Hardeman	5	0	0	5	4,594
Jack	19	3	1	15	72,832
King	3	0	0	3	17,548
Knox	1	0	0	1	1,862
Montague	42	9	0	33	196,255
Wichita	51	5	0	46	162,108
Wilbarger	12	1	0	11	51,136
Wise	10	4	0	6	35,892
Young	42	11	1	30	151,144
Total	429	53	3	373	1,467,990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NORTH CENTRAL TEXAS
(District 9)
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Acme	52	48	0	4	239,096
Archer County regular	170	82	1	87	217,282
Bateman Ranch	10	10	0	0	52,150
Bryant	12	5	0	7	68,238
Bulcher	21	15	0	6	45,226
Burkburnett	7	4	0	3	11,349
Burns-Jones	23	20	0	3	78,840
Chalk Hill	25	21	0	4	99,360
Chalk Hill, No.	34	31	0	3	131,124
Chico	21	16	2	3	102,140
Cook County regular	32	13	1	18	49,369
Daume	8	6	0	2	30,684
Edwards	7	6	0	1	29,547
Electra	27	16	0	11	51,483
Ellis	7	4	0	3	15,798
Fargo	4	4	0	0	16,427
Garvey	8	6	0	2	29,825
Gatewood	8	6	0	2	13,045
Holbert Caddo	12	8	0	4	44,497
Hull-Silk-Sikes	20	14	0	6	79,225
Johnson-Scaling	6	3	0	3	29,011
Jones	8	6	0	2	25,626
Joy	59	49	0	10	267,270
KMA	13	8	0	5	48,295
Kadane	15	10	0	5	46,492
Kempner	23	21	0	2	90,436
Kendall	17	13	0	4	59,997
Knox	11	7	1	3	42,294
Lewis-Stuart	14	11	0	3	88,928
Miller	3	2	0	1	18,695
Minor	3	1	0	2	19,506
Montague County	65	53	0	12	79,075
Muenster	8	4	0	4	11,750
Nocona	23	17	0	6	23,715
North Holliday	7	6	0	1	25,442
Rendham	4	4	0	0	12,433
Ringgold	12	10	0	2	66,722
Ross	8	3	0	5	39,996
Sivels Bend	10	8	0	2	71,078
Steed	7	5	0	2	33,721
Sunshine Hill	8	2	0	6	12,548
Vogtsberger	6	4	0	2	28,893
Walnut Bend	34	31	0	3	155,403
Walsh	6	5	0	1	26,700
West	7	6	0	1	31,180
Wichita County	240	136	0	104	362,501
Wilson	30	23	0	7	85,643
Woodbine	8	7	0	1	33,232
Young County	107	53	1	53	143,269
Other fields	685	325	3	357	1,905,129
Total	1,955	1,168	9	778	5,289,685

Altimeters
for all preliminary surveys

Accurate, sensitive, rugged, the new improved SA series American Paulin System Surveying Altimeters supply readings in 1/10th the time with accuracy better than 1 part in 1000. These altimeters have been recognized for years by leading field engineers and geologists as the *world's standard in dependability.*

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Manufacturers of Precision Instruments
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Altimeters

WEST CENTRAL TEXAS
(District 7-B)
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	50	11	0	39	151,759
February	21	4	1	16	80,457
March	35	7	4	24	112,395
April	30	4	0	26	95,992
May	40	5	0	35	137,254
June	31	4	2	25	116,394
July	53	6	0	47	187,694
August	31	7	1	23	86,293
September	59	14	3	42	192,726
October	40	6	0	34	134,874
November	36	2	0	34	129,751
December	43	6	0	37	151,804
Total	469	76	11	382	1,577,393

WEST CENTRAL TEXAS
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	69	43	0	26	189,594
February	60	37	2	21	199,609
March	78	40	5	33	235,280
April	69	51	1	17	215,065
May	66	42	3	21	183,705
June	74	49	6	19	194,023
July	98	60	5	33	289,097
August	76	47	3	26	223,293
September	107	66	3	38	337,632
October	78	49	3	26	253,171
November	109	81	3	25	327,798
December	113	70	3	40	328,806
Total	997	635	37	325	2,977,073

WEST CENTRAL TEXAS
Total Completions by Months

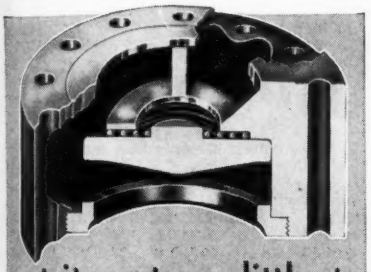
Month—	Comp.	Oil	Gas	Dry	Footage
January	119	54	0	65	341,353
February	81	41	3	37	280,066
March	113	47	9	57	347,675
April	99	55	1	43	311,057
May	106	47	3	56	320,959
June	105	53	8	44	310,417
July	151	66	5	80	476,791
August	107	54	4	49	309,586
September	166	80	6	80	530,358
October	118	55	3	60	388,045
November	145	83	3	59	457,549
December	156	76	3	77	480,610
Total	1,466	711	48	*707	4,554,466

*Includes 4 service wells.

WEST CENTRAL TEXAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Brown	29	6	3	20	56,922
Callahan	55	5	1	49	148,899
Coleman	24	1	0	23	70,536
Comanche	29	4	0	25	101,376
Eastland	37	4	0	33	115,852
Erath	3	1	0	2	14,222
Fisher	16	2	0	14	84,240
Hamilton	3	0	0	3	8,077
Haskell	21	2	0	19	88,705
Hood	1	0	0	1	5,278
Jones	88	16	0	72	274,672
Johnson	2	0	0	2	3,341
Mills	1	0	0	1	1,250
Nolan	5	0	0	5	33,481
Palo Pinto	6	1	2	3	14,495
San Saba	1	0	0	1	1,662
Shackelford	31	8	0	23	105,658
Stephens	32	8	5	19	126,068
Stonewall	4	0	0	4	23,808
Taylor	39	5	0	34	126,078
Throckmorton	42	13	0	29	172,773
Total	469	76	11	382	1,577,393

WATER HAMMER *can cost a* Fortune



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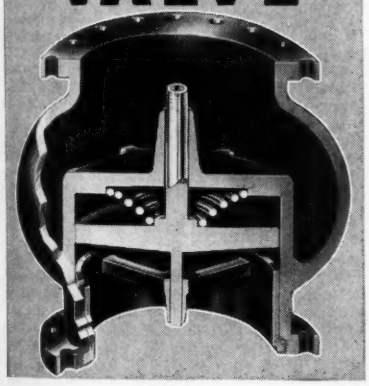
THE WILLIAMS-HAGER *flanged* SILENT CHECK VALVE



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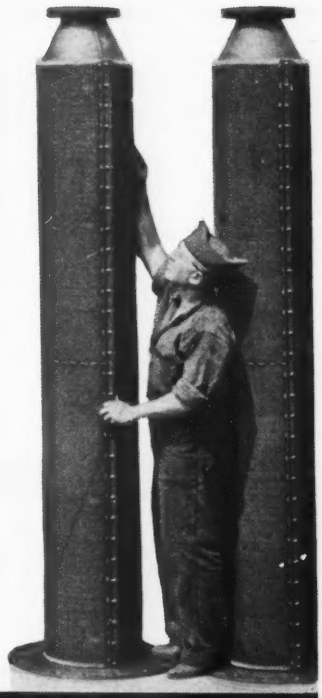
FILTER UNITS *by* MULTI-METAL



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WIRE CLOTH COMPANY, INC.
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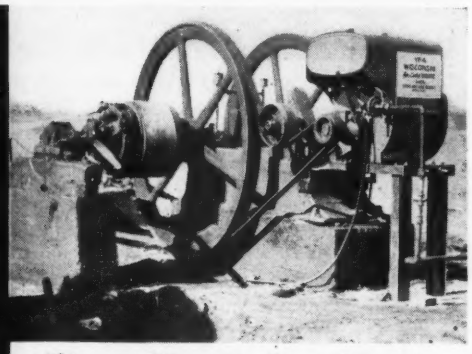
WISCONSIN *Air-Cooled* ENGINE *Weighing* 482 Lbs. *Replaces* 6000 Lb. Engine!



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MILWAUKEE 14, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

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510 Atlas Building, Tulsa, Oklahoma
M & M Building, Houston, Texas
Oil field distributors for Wisconsin Engines and all types of utility units.

WEST CENTRAL TEXAS
(District 7-B)

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Anzac-Morris	5	1	0	4	12,329
Bartlett	25	22	0	3	82,311
Baum	3	2	0	1	11,879
Bead Mountain	3	0	1	2	9,862
Blake Caddo	8	7	0	1	18,997
Brown County	18	9	1	8	36,452
Callahan County	10	3	0	7	15,316
Chaney	12	6	4	2	37,751
Coleman County	18	9	1	8	35,595
Comanche County	5	5	0	0	14,346
Cook	23	22	0	1	34,034
Cross Cut	7	4	1	2	11,121
Ellenburger	7	6	0	1	30,100
Durham	4	3	0	1	17,496
Eastland County	14	9	0	5	52,223
Eskota	5	5	0	0	22,123
Gibson	3	3	0	0	8,493
Hardy	17	9	0	8	37,085
Haskell County	8	5	0	3	18,238
Howsley	4	2	0	2	17,466
Hubbard Creek	9	4	0	5	37,857
Ibex and East	5	3	0	2	21,569
Ingram	3	1	0	2	8,309
Jones County regular	44	28	0	16	110,484
Kirk	69	62	1	6	191,628
Kleiner	6	5	0	1	24,435
Lee Ray	21	10	7	4	78,774
McKnight	7	7	0	0	30,866
Manning-O'Connor	3	3	0	0	10,274
Novice and No.	5	1	0	4	18,858
Parrott	6	3	0	3	26,864
Patterson	9	7	0	2	23,836
Pitzer	11	9	0	2	43,736
Reidenbach	7	7	0	0	8,109
Round Top	22	21	0	1	103,878
Sayles	5	4	0	1	11,619
Shackelford County	65	44	0	21	170,230
Stephens County	53	36	3	14	187,808
Taylor County	6	4	0	2	15,310
Throckmorton County	59	45	0	14	197,912
Wimberly	25	23	0	2	63,510
Other fields	358	176	18	164	1,067,990
Total	997	635	37	325	2,977,073

WEST TEXAS
(Districts 8 and 7-C)

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	21	3	0	18	118,321
February	17	7	0	10	82,363
March	20	1	1	18	110,782
April	26	5	0	21	130,901
May	21	4	1	16	100,643
June	20	7	0	13	103,573
July	47	14	0	33	242,211
August	26	9	1	16	158,892
September	35	8	0	27	215,338
October	24	5	2	17	152,128
November	20	2	1	17	128,777
December	37	7	1	29	231,172
Total	314	72	7	235	1,775,101

WEST TEXAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	237	212	2	23	1,083,354
February	167	157	1	9	764,011
March	255	230	4	21	1,201,926
April	204	185	0	19	872,831
May	233	212	2	19	1,019,697
June	240	214	2	24	1,036,306
July	314	286	2	26	1,478,522
August	223	204	1	18	1,056,132
September	321	294	5	22	1,548,086
October	231	218	2	11	1,167,901
November	225	210	0	15	1,025,220
December	287	262	3	22	1,398,447
Total	2,937	2,684	24	229	13,652,433

WEST TEXAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	258	215	2	41	1,201,675
February	184	164	1	19	846,374
March	275	231	5	39	1,312,708
April	230	190	0	40	1,003,732
May	254	216	3	35	1,120,340
June	260	221	2	37	1,139,879
July	361	300	2	59	1,720,733
Augusa	249	213	2	34	1,215,024
September	356	302	5	49	1,763,424
October	255	223	4	28	1,320,029
November	245	212	1	32	1,153,997
December	324	269	4	51	1,629,619
Total	3,251	2,756	31	464	15,427,534

WEST TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Andrews	26	10	1	15	191,200
Borden	2	0	0	2	17,502
Cochran	12	7	0	5	58,300
Coke	8	6	0	2	51,136
Concho	4	0	0	4	21,646
Crane	9	5	0	4	64,100
Crockett	17	2	1	14	86,810
Crosby	2	0	0	2	17,047
Culberson	13	0	0	13	17,445
Dawson	4	1	1	2	20,059
Dickens	1	0	0	1	7,716
Ector	8	5	0	3	69,615
Floyd	2	0	0	2	8,457
Gaines	20	4	1	15	132,920
Garza	6	0	0	6	35,719
Glasscock	6	2	0	4	20,810
Hale	1	1	0	0	7,987
Hockley	10	4	0	6	58,761
Howard	7	1	0	6	32,001
Irion	4	0	0	4	33,189
Kent	1	0	0	1	7,589
Lamb	1	0	0	1	7,242
Loving	1	0	0	1	3,822
Lubbock	3	1	0	2	24,706
Martin	2	0	0	2	22,498
Mitchell	11	2	0	9	63,251
Pecos	34	3	3	28	95,775
Presidio	1	0	0	1	8,002
Reagan	5	0	0	5	27,656
Reeves	9	3	0	6	42,642

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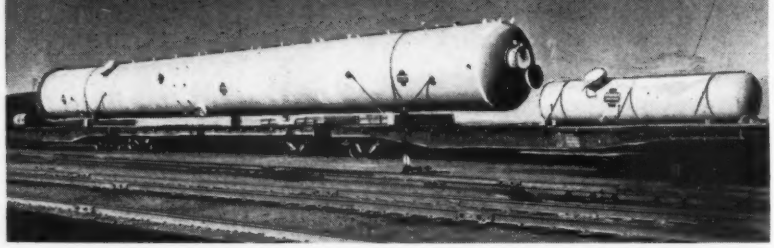

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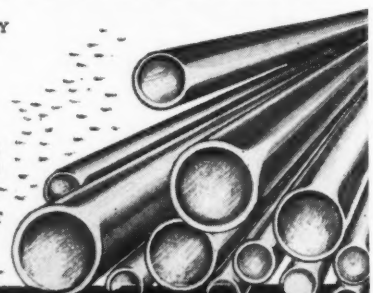

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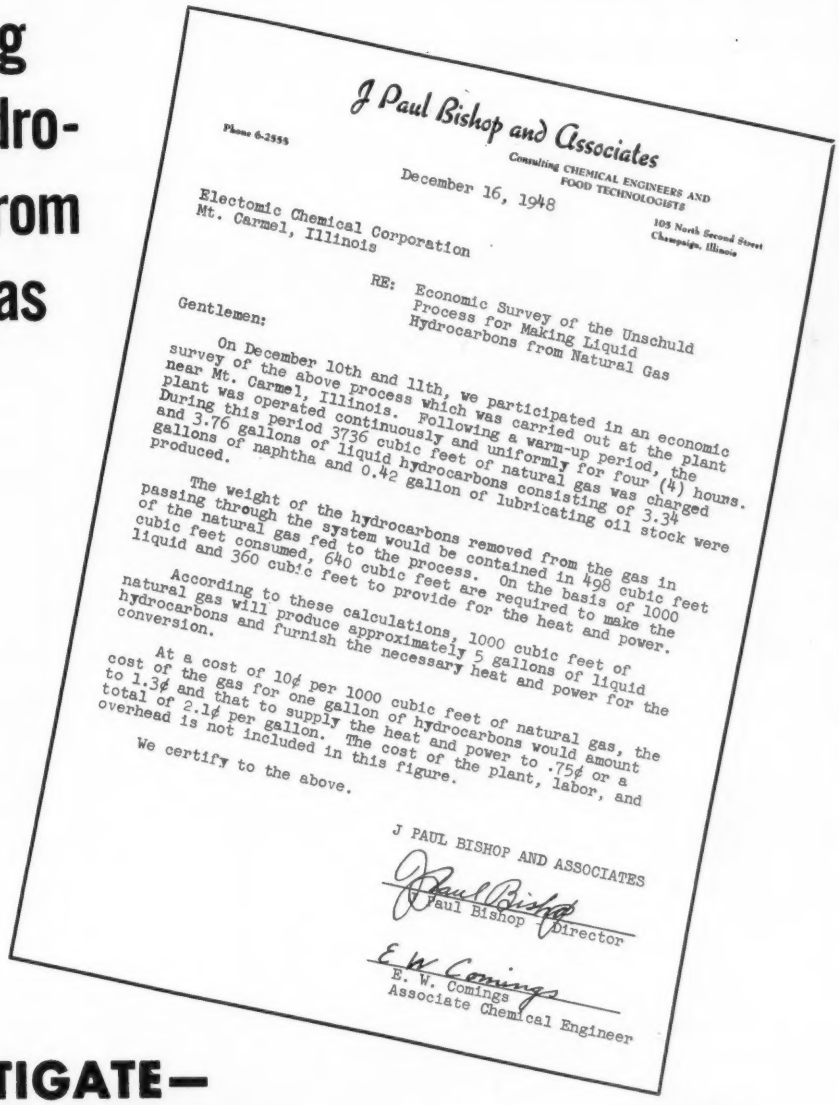

J Paul Bishop and Associates

Consulting CHEMICAL ENGINEERS AND FOOD TECHNOLOGISTS

Phone 6-2555

105 North Second Street
Champaign, Illinois

December 16, 1948

Electomic Chemical Corporation
Mt. Carmel, Illinois

RE: Economic Survey of the Unschuld Process for Making Liquid Hydrocarbons from Natural Gas

Gentlemen:

On December 10th and 11th, we participated in an economic survey of the above process which was carried out at the plant near Mt. Carmel, Illinois. Following a warm-up period, the plant was operated continuously and uniformly for four (4) hours. During this period 3736 cubic feet of natural gas was charged and 3.76 gallons of liquid hydrocarbons consisting of 3.3¢ gallons of naphtha and 0.42 gallon of lubricating oil stock were produced.

The weight of the hydrocarbons removed from the gas in passing through the system would be contained in 498 cubic feet of the natural gas fed to the process. On the basis of 1000 cubic feet consumed, 640 cubic feet are required to make the liquid and 360 cubic feet to provide for the heat and power.

According to these calculations, 1000 cubic feet of natural gas will produce approximately 5 gallons of liquid hydrocarbons and furnish the necessary heat and power for the conversion.

At a cost of 10¢ per 1000 cubic feet of natural gas, the cost of the gas for one gallon of hydrocarbons would amount to 1.3¢ and that to supply the heat and power to .75¢ or a total of 2.1¢ per gallon. The cost of the plant, labor, and overhead is not included in this figure.

We certify to the above.

J PAUL BISHOP AND ASSOCIATES

J Paul Bishop
J Paul Bishop, Director

E W Comings
E. W. Comings
Associate Chemical Engineer

INVESTIGATE—
THE UNSCHULD PROCESS

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ELECTOMIC CHEMICAL CORPORATION

Mt. Carmel, Ill. **Telephone 827**

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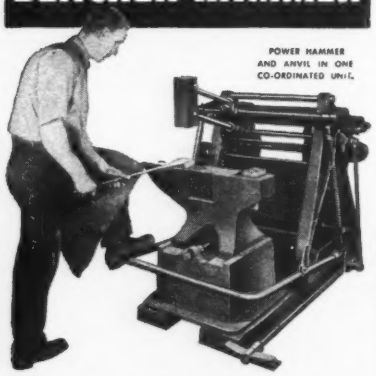

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County—	Comp.	Oil	Gas	Dry	Footage
Runnels	18	2	0	16	70,616
Schleicher	8	1	0	7	43,630
Scurry	9	5	0	4	48,819
Sterling	13	3	0	10	87,713
Sutton	9	0	0	9	46,295
Terrell	1	0	0	1	2,180
Terry	5	0	0	5	43,412
Tom Green	6	1	0	5	41,338
Upton	4	2	0	2	44,764
Val Verde	2	0	0	2	4,786
Ward	3	0	0	3	24,989
Winkler	4	1	0	3	47,617
Yoakum	2	0	0	2	13,339
Total	314	72	7	235	1,775,101

WEST TEXAS
(Districts 8 and 7-C)
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Adair	54	50	0	4	262,785
Andector Clear Fork	10	10	0	0	76,887
Andector Ellenburger	33	32	0	1	283,074
Anton-Irish	90	85	0	5	546,066
Arick	5	4	0	1	30,001
Arledge	4	3	0	1	27,297
Barnhart	15	14	0	1	137,946
Bedford	5	5	0	0	54,675
Benedum (all pays)	9	8	0	1	107,428
Block 31	12	11	0	1	108,645
Clara Couch	8	7	1	0	22,210
Clara Couch-Wolfcamp	6	4	0	2	22,827
Coleman Ranch	16	16	0	0	45,024
Crossett	7	4	0	3	38,878
Dollar Hide	46	45	0	1	424,523
Doss	12	11	0	1	85,740
Dunes	22	21	0	1	74,448
Emperor Holt	10	8	1	1	44,855
Emperor Deep	3	3	0	0	13,359
Foster	21	19	0	2	91,035
Fuhrman	9	9	0	0	40,320
Fuhrman-Mascho	51	51	0	0	232,560
Fullerton Clearfork	53	50	0	3	371,636
Fullerton Devonian	9	9	0	0	78,264
Fullerton Ellenburger	4	4	0	0	39,495
Garza	63	58	0	5	187,803
Gib	6	5	0	1	17,112
Goldsmith San Andres	17	17	0	0	72,029
Goldsmith Clearfork	39	39	0	0	246,480
Goldsmith Ellenburger	2	2	0	0	16,177
No. Goldsmith Silurian	2	2	0	0	16,300
Howard-Glasscock	61	54	0	7	144,430
Iatan-East Howard	29	28	0	1	84,767
Jameson	37	32	0	5	239,242
Jones Ranch	5	4	0	1	57,082
Jordan Clearfork	6	5	0	1	27,518
Jordan Ellenburger	13	12	0	1	115,479
Jordan Tubb	7	5	0	2	36,925
Keystone Colby	30	29	0	1	103,810
Keystone Devonian	30	30	0	0	238,608
Keystone Ellenburger	8	3	5	0	72,273
Keystone Holt	20	20	0	0	102,200
Keystone Silurian	13	13	0	0	103,345
Levelland	519	510	0	9	2,420,800
McCamey	32	30	0	2	88,027
McElroy	76	74	0	2	234,460
Mabee	10	10	0	0	47,230
Martin	28	26	0	2	241,543
Marvin	6	1	0	5	28,862
Means	20	17	0	3	90,460
Midland Farms	16	15	0	1	77,152
Midway Lane	27	25	0	2	205,902
Monahans	15	13	0	2	74,490
North Cowden	26	24	0	2	117,400
North Scarborough	8	8	0	0	17,920
North Ward-Estes	21	18	0	3	65,600

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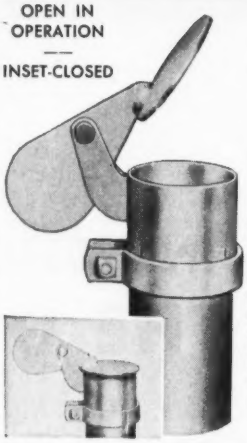

The "Weathercap" exhaust pipe cover is counterbalanced to open instantly from the engine exhaust pressure—closes automatically when engine shuts down.

Simple protection against dirt, rain and insects during storage or idle periods. No restriction or back pressure, assuring full horsepower output.

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BUDA ENGINE SALES & SERVICE, Inc.
521 W. ARCHER TULSA, OKLA.

Field—	Comp.	Oil	Gas	Dry	Footage
Olson	6	6	0	0	17,516
Page	12	12	0	0	64,423
Pecos Valley (HG)	29	21	1	7	46,100
Penwell	6	6	0	0	26,810
Robertson	9	9	0	0	58,513
Sand Hills	25	25	0	0	106,520
Shafter Lake Gas	10	0	9	1	30,400
Shafter Lake Devonian	37	34	0	3	346,221
Shannon	8	6	0	2	17,168
Sharon Ridge	140	136	0	4	242,917
Slaughter	157	157	0	0	776,500
South Cowden	64	64	0	0	286,700
Three-Bar	11	9	0	2	101,616
Tippett	5	4	1	0	38,926
Toborg	210	183	0	27	91,722
Todd Deep	6	5	0	1	36,685
Tunstill	36	34	0	2	119,142
TXL Clearfork	14	14	0	0	87,502
TXL Devonian	20	20	0	0	164,500
TXL Ellenburger	17	16	0	1	157,960
TXL Silurian	2	2	0	0	18,429
Union	5	5	0	0	37,075
University Waddell	4	3	0	1	44,254
Vealmoor	6	6	0	0	49,554
Waddell	10	10	0	0	50,423
Wasson	15	14	0	1	79,625
Welch	24	21	0	3	118,176
Wheeler	17	15	0	2	166,841
White & Baker	7	6	0	1	13,210
World-Powell	6	5	0	1	17,042
Yarbrough & Allen	9	6	0	3	98,238
Yellowhouse	24	22	0	2	110,346
Other fields	280	196	6	78	1,179,977
Total	2,937	2,684	24	229	13,652,433

TEXAS PANHANDLE
(District 10)

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
February	1	0	1	0	3,393
March	3	0	0	3	9,496
April	3	0	0	3	15,516
July	1	0	1	0	3,427
August	2	0	1	1	12,604
September	1	0	0	1	3,632
November	4	1	0	3	19,155
Total	15	1	3	11	67,223

TEXAS PANHANDLE
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	59	33	23	3	176,826
February	33	19	11	3	99,492
March	51	41	8	2	152,929
April	48	33	10	5	145,284
May	42	32	5	5	128,068
June	52	40	7	5	157,601
July	64	50	8	6	194,520
August	54	44	8	2	165,256
September	66	49	14	3	202,243
October	54	41	11	2	163,706
November	57	36	18	3	175,828
December	71	52	17	2	223,704
Total	651	470	140	41	1,985,457

TEXAS PANHANDLE
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	59	33	23	3	176,826
February	34	19	12	3	102,885
March	54	41	8	5	162,425
April	51	33	10	8	160,800
May	42	32	5	5	128,068
June	52	40	7	5	157,601
July	63	50	9	6	197,947
August	56	44	9	3	177,860
September	67	49	14	4	205,875
October	54	41	11	2	163,706
November	61	37	18	6	194,983
December	71	52	17	2	223,704
Total	666	471	143	*52	2,052,680

*Includes 7 service wells.

TEXAS PANHANDLE
Development Completions by Counties

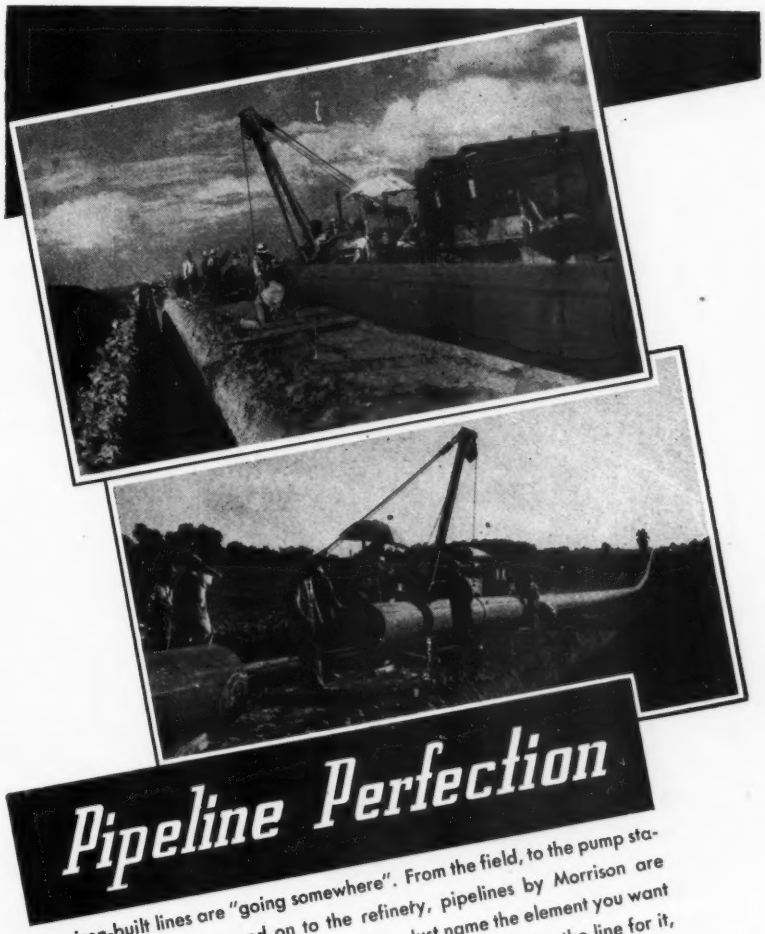
County—	Comp.	Oil	Gas	Dry	Footage
Carson	45	21	24	0	142,200
Gray	121	86	19	16	388,531
Hansford	8	0	8	0	24,239
Hutchinson	386	350	19	17	1,143,524
Moore	14	5	6	3	48,398
Sherman	61	0	60	1	201,605
Wheeler	16	8	4	4	36,960
Total	651	470	140	41	1,985,457

TEXAS PANHANDLE
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Collingsworth	2	0	0	2	4,784
Deaf Smith	1	0	0	1	6,675
Donley	3	0	0	3	8,498
Gray	1	1	0	0	2,718
Hartley	1	0	1	0	5,929
Hutchinson	1	0	0	1	3,632
Lipscomb	2	0	0	2	5,005
Moore	1	0	1	0	3,427
Roberts	2	0	0	2	23,162
Sherman	1	0	1	0	3,393
Total	15	1	3	11	67,223

SOUTHEAST NEW MEXICO
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	1	0	2	17,211
February	3	1	0	2	14,266
March	6	1	0	5	26,173
April	7	1	0	6	33,337
May	3	1	0	2	25,514
June	4	0	1	3	26,558
July	7	0	0	7	32,833
August	3	0	0	3	16,006
September	4	0	1	3	15,396
October	5	0	1	4	15,808
November	8	1	0	7	31,164
December	10	2	0	8	41,227
Total	63	8	3	52	295,493



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SOUTHEAST NEW MEXICO
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	63	56	3	4	287,116
February	26	21	5	0	122,416
March	52	42	3	7	233,414
April	49	36	3	10	198,204
May	38	31	2	5	162,709
June	35	31	2	2	148,416
July	53	44	2	7	216,008
August	37	30	2	5	151,451
September	48	39	3	6	208,842
October	38	33	1	4	164,692
November	33	25	3	5	140,594
December	44	36	4	4	200,385
Total	516	424	33	59	2,234,247

SOUTHEAST NEW MEXICO
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	66	57	3	6	304,327
February	29	22	5	2	136,682
March	58	43	3	12	259,587
April	56	37	3	16	231,541
May	41	32	2	7	188,223
June	39	31	3	5	174,974
July	60	44	2	14	248,841
August	40	30	2	8	167,457
September	52	39	4	9	224,238
October	43	33	2	8	180,500
November	41	26	3	12	171,758
December	54	38	4	12	241,612
Total	579	432	36	111	2,529,740

SOUTHEAST NEW MEXICO
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Chaves	15	0	0	15	64,104
Eddy	22	2	2	18	73,200
Lea	26	6	1	19	158,189
Total	63	8	3	52	295,493

SOUTHEAST NEW MEXICO
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Anderson	6	6	0	0	16,828
Artesia	33	25	1	7	76,890
Baish	5	4	0	1	13,088
Bowers	35	31	0	4	113,432
Brunson	19	19	0	0	127,691
Caprock	31	28	0	3	94,705
Cooper-Jal	17	7	10	0	56,551
Drinkard	93	88	2	3	623,007
Empire	6	5	0	1	10,502
Forrest	6	6	0	0	15,559
Fren	7	7	0	0	13,805
Grayburg-Jackson	15	13	0	2	82,475
Hare	3	3	0	0	22,805
Hobbs	6	5	0	1	25,218
Langlie-Mattix	31	19	9	3	103,912
Lovington and West	11	9	0	2	56,210
Maljamar	9	8	0	1	37,831
Monument	10	9	0	1	89,424
North Shugart	5	5	0	0	17,928
Paddock	8	8	0	0	44,854
Penrose-Skelly	9	5	3	1	49,183
Penrose (Montoya)	1	1	0	0	8,086
Red Lakes	24	17	2	5	41,990
Roberts	3	3	0	0	12,701
South Eunice	7	4	2	1	25,900
Square Lakes	6	4	0	2	20,894
Teague	3	2	1	0	28,947
Vacuum	32	29	0	3	150,112
West Eunice	10	8	0	2	37,780
Other fields	65	46	3	16	215,939
Total	516	424	33	59	2,234,247

NORTHWEST NEW MEXICO
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
June	1	0	0	1	4,010
August	1	0	0	1	4,800
September	2	0	1	1	12,045
October	2	0	0	2	6,748
November	1	0	0	1	5,987
December	1	0	0	1	4,695
Total	8	0	1	7	38,285

NORTHWEST NEW MEXICO
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	0	1	2	7,674
February	3	0	1	2	2,644
March	1	0	0	1	969
April	2	0	1	1	3,251
July	1	0	0	1	2,499
September	1	0	0	1	936
October	3	0	1	2	7,445
November	2	1	1	0	3,000
December	3	0	2	1	5,121
Total	19	1	7	11	33,539

NORTHWEST NEW MEXICO
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	0	1	2	7,674
February	3	0	1	2	2,644
March	1	0	0	1	969
April	2	0	1	1	3,251
June	1	0	0	1	4,010
July	1	0	0	1	2,499
August	1	0	0	1	4,800
September	3	0	1	2	12,981
October	5	0	1	4	14,193
November	3	1	1	1	8,987
December	4	0	2	2	9,816
Total	27	1	8	18	71,824

NORTHWEST NEW MEXICO
Wildcat Completions by Counties

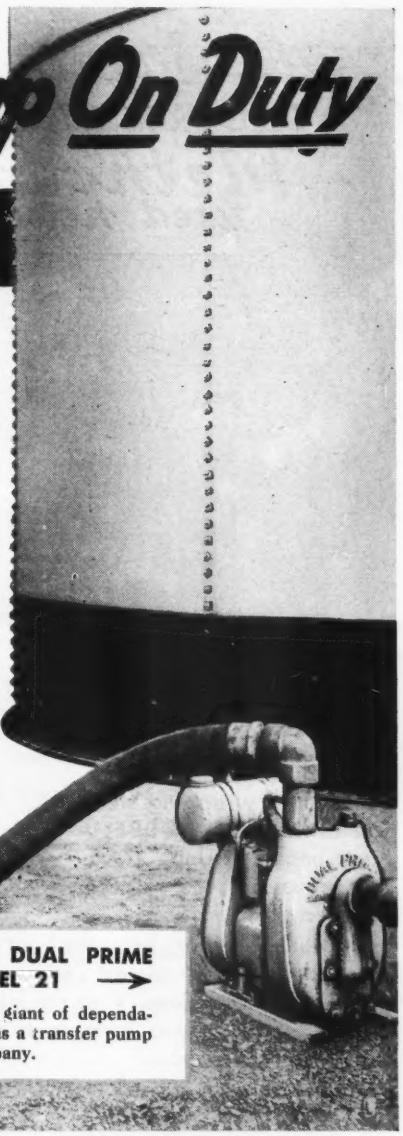
County—	Comp.	Oil	Gas	Dry	Footage
McKinley	2	0	0	2	8,705
Rio Arriba	4	0	0	4	16,170
San Juan	2	0	1	1	13,410
Total	8	0	1	7	38,285

NORTHWEST NEW MEXICO
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Aztec	1	0	1	0	1,792
Blanco	2	0	0	2	8,469
Kutz	5	0	5	0	11,381
Rattlesnake	9	1	0	9	8,043
Ute	2	0	1	1	4,854
Total	19	1	7	11	33,539

CMC Pump On Duty

The Sure Sign of Dependability



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Extra air handling ability permits dependable performance when ordinary centrifugal pumps become air bound and lose prime.

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"The little giant of dependability" on duty as a transfer pump for a major oil company.

CONSTRUCTION MACHINERY CO'S.

WATERLOO, IOWA, U.S.A.

1903 Blodgett St., Houston, Texas TELEPHONE HADLEY 1988

NORTH LOUISIANA
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	9	0	0	9	36,880
February	4	0	0	4	19,453
March	10	0	0	10	50,356
April	9	0	0	9	31,593
May	8	0	0	8	26,603
June	11	2	0	9	68,619
July	11	0	0	11	61,109
August	12	1	1	10	60,734
September	9	0	1	8	43,073
October	15	2	1	12	92,526
November	9	1	0	8	54,535
December	12	2	0	10	62,208
Total	119	8	3	108	607,689

NORTH LOUISIANA
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	112	82	12	18	285,566
February	61	44	5	12	170,372
March	97	83	3	11	239,500
April	118	85	11	22	281,838
May	131	99	6	26	314,580
June	112	85	8	19	262,164
July	165	122	12	31	463,491
August	113	88	8	17	264,314
September	193	146	17	30	407,874
October	128	99	11	18	301,344
November	88	61	10	17	235,672
December	117	93	6	18	293,688
Total	1,435	1,087	109	239	3,520,403

NORTH LOUISIANA
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	121	82	12	27	322,446
February	65	44	5	16	189,825
March	107	83	3	21	289,856
April	127	85	11	31	313,431
May	139	99	6	34	341,[illegible]
June	123	87	8	28	330,[illegible]
July	176	122	12	42	524,[illegible]
August	125	89	9	27	325,[illegible]
September	202	146	18	38	450,[illegible]
October	143	101	12	30	393,[illegible]
November	97	62	10	25	290,[illegible]
December	129	95	6	28	355,[illegible]
Total	1,554	1,095	112	*347	4,128,[illegible]

*Includes 4 service wells.

NORTH LOUISIANA
Wildcat Completions by Parishes

Parish—	Comp.	Oil	Gas	Dry	Footage
Bienville	4	0	1	3	32,[illegible]
Bossier	8	0	0	8	29,[illegible]
Caddo	2	0	0	2	11,[illegible]
Catahoula	5	1	0	4	41,[illegible]
Claiborne	6	1	0	5	43,[illegible]
Concordia	2	0	0	2	19,[illegible]
DeSoto	10	0	1	9	50,[illegible]
East Carroll	1	0	0	1	2,[illegible]
Franklin	3	0	0	3	14,[illegible]
Grant	3	0	0	3	16,[illegible]
Jackson	1	0	0	1	7,[illegible]
LaSalle	1	0	0	1	4,[illegible]
Lincoln	1	0	0	1	10,[illegible]
Madison	4	0	0	4	17,[illegible]
Natchitoches	5	1	0	4	37,[illegible]
Ouachita	3	1	1	1	24,[illegible]
Red River	5	0	0	5	14,[illegible]
Richland	6	0	0	6	23,[illegible]
Sabine	9	0	0	9	49,[illegible]
Tensas	4	0	0	4	28,[illegible]
Union	22	2	0	20	55,[illegible]
Webster	6	2	0	4	41,[illegible]
Winn	8	0	0	8	31,[illegible]
Total	119	8	3	108	607,689

NORTH LOUISIANA
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Ada	6	2	1	3	40,973
Ashland	5	4	0	1	16,448
Bellevue	39	26	2	11	27,647
Benton	6	3	0	3	24,189
Big Creek	20	13	0	7	66,019
Bryceland	2	2	0	0	16,324
Caddo	748	707	3	38	1,193,080
Choudrant	2	1	0	1	18,702
Cotton Valley	8	4	0	4	40,518
Delhi	36	17	0	19	128,304
Georgetown	8	6	0	2	12,120
Gorum	3	0	0	3	20,132
Haynesville	14	14	0	0	147,462
Hico-Knowles	14	10	2	2	124,264
Homer	6	3	0	3	17,402
Hosston	6	3	2	1	17,492
Lake St. John	26	19	4	3	189,407
Lisbon	29	23	3	3	178,088
Little Creek	12	5	0	7	24,051
Loganport	8	3	4	1	56,320
Longwood	7	0	1	6	23,773
Monroe	71	0	69	2	146,455
Ora	133	103	0	30	265,177
Red River-De-Soto	21	5	1	15	40,005
Saline Bayou	5	4	0	1	33,510
Truxno	28	20	0	8	60,234
Tullos	28	26	0	2	42,196
Miscellaneous	144	64	17	63	550,104
Total	1,435	1,087	109	239	3,520,403

SOUTH LOUISIANA
Wildcat Completions by Months

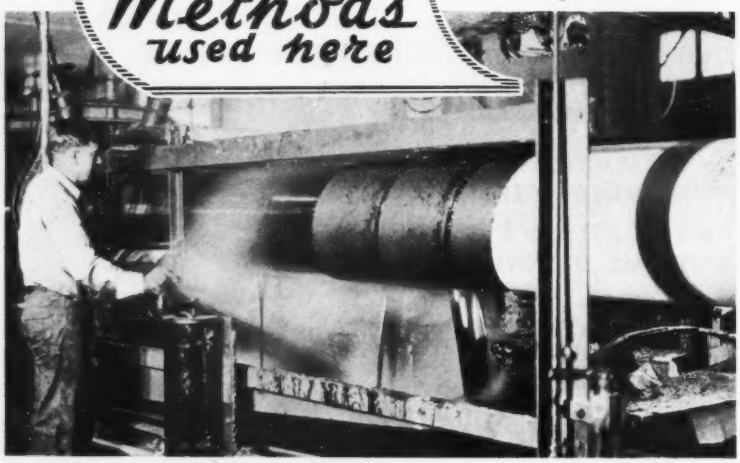
Month—	Comp.	Oil	Gas	Dry	Footage
January	8	3	0	5	87,829
February	15	7	1	7	141,403
March	11	2	0	9	127,837
April	17	6	0	11	184,324
May	13	4	1	8	138,736
June	18	6	0	12	196,775
July	20	12	1	7	182,163
August	18	7	0	11	182,681
September	19	7	1	11	191,828
October	14	4	1	9	146,678
November	12	4	1	7	128,701
December	26	7	1	18	282,831
Total	191	69	7	115	1,991,986

SOUTH LOUISIANA
Development Completions by Months

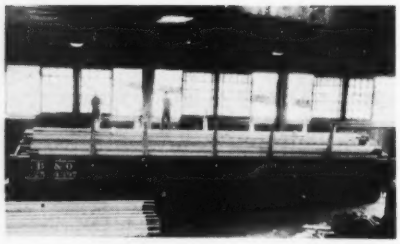
Month—	Comp.	Oil	Gas	Dry	Footage
January	43	31	3	9	342,384
February	39	24	1	14	331,590

No Uncertain PIPE PROTECTION *Methods used here*

HILL HUBBELL PIPE PROTECTION



HILL, HUBBELL FACTORY METHODS *are Modern...*



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Rain, snow, dust, fog, extreme heat or cold, are hazards that have caused serious damage to many field-coated jobs. With the HILL, HUBBELL process all operations, even to the loading of cars, are done indoors.

Our name is on our work—*YOUR* assurance of *MAXIMUM* pipe protection.

PROGRESSIVE ADVANCEMENT YESTERDAY TODAY and TOMORROW

Hill, Hubbell and *Company*
Division of GENERAL PAINT CORPORATION
3091 MAYFIELD RD. CLEVELAND, OHIO.

Month—	Comp.	Oil	Gas	Dry	Footage
March	37	22	0	15	340,179
April	49	35	1	13	401,235
May	43	33	1	9	336,376
June	52	32	3	17	416,154
July	64	46	2	16	510,995
August	51	32	0	19	428,428
September	50	35	1	14	422,021
October	44	29	0	15	341,158
November	55	38	0	17	511,583
December	53	31	2	20	432,139
Total	580	388	14	178	4,814,242

SOUTH LOUISIANA
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	51	34	3	14	430,213
February	54	31	2	21	472,993
March	48	24	0	24	468,016
April	66	41	1	24	585,559
May	56	37	2	17	475,112
June	70	38	3	29	612,929
July	84	58	3	23	693,158
August	69	39	0	30	611,109
September	69	42	2	25	613,849
October	58	33	1	24	488,036
November	67	42	1	24	640,284
December	79	38	3	38	714,970
Total	771	457	21	*293	6,806,228

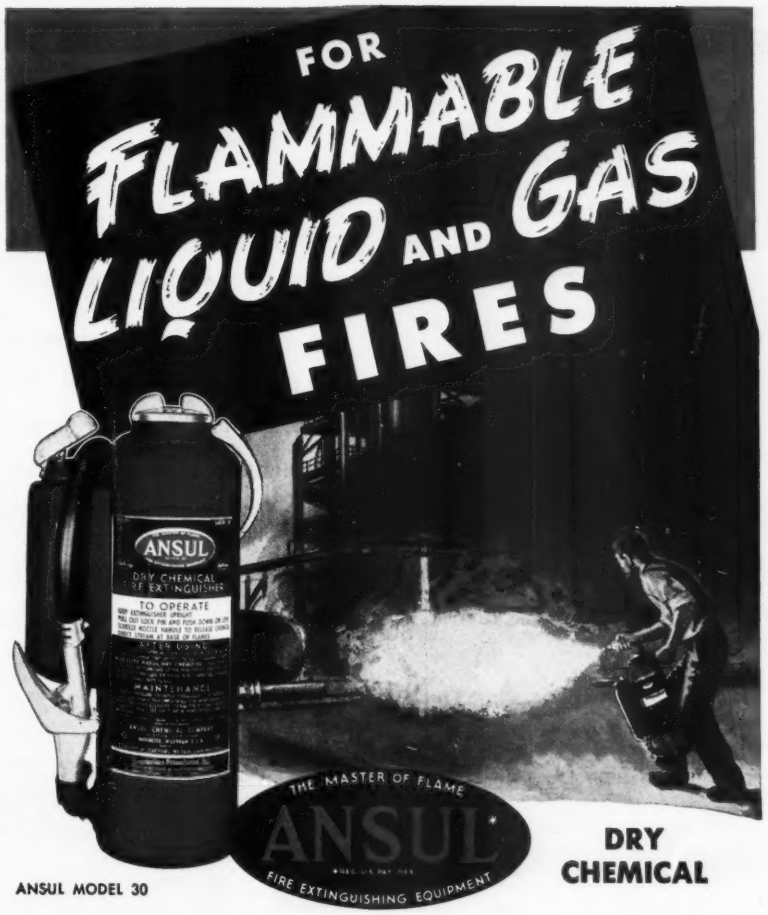
*Includes 2 service wells.

SOUTH LOUISIANA
Wildcat Completions by Parishes

Parish—	Comp.	Oil	Gas	Dry	Footage
Acadia	13	4	1	8	134,637
Allen	3	0	0	3	23,707
Ascension	1	0	0	1	11,955
Assumption	2	1	0	1	24,905
Avoyelles	8	2	0	6	72,849
Beauregard	16	8	0	8	143,588
Calcasieu	16	7	1	8	158,965
Cameron	17	3	1	13	198,553
E. Baton Rouge	2	0	0	2	20,294
Evangeline	1	0	0	1	13,407
Iberia	6	3	0	3	73,026
Iberville	5	2	0	3	54,930
Jefferson	9	7	0	2	97,914
Jefferson Davis	1	0	0	1	8,751
Lafayette	2	0	0	2	25,392
Lafourche	14	7	0	7	162,942
Livingston	1	0	0	1	11,600
Orleans	2	0	0	2	19,855
Plaquemines	9	3	1	5	93,761
Pointe Coupee	3	1	0	2	31,815
Rapides	2	0	0	2	18,840
St. Charles	3	3	0	0	31,444
St. James	1	0	0	1	10,020
St. Landry	8	2	0	6	88,024
St. Martin	6	4	0	2	56,168
St. Mary	15	6	0	9	127,852
Terrebonne	15	5	2	8	155,079
Vermilion	8	1	1	6	103,696
Vernon	1	0	0	1	8,523
Washington	1	0	0	1	9,494
Total	191	69	7	115	1,991,986

SOUTH LOUISIANA
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Anse La Butte	6	5	0	1	19,341
Avery Island	6	5	0	1	62,651
Bancroft	2	2	0	0	16,342
Barataria	5	5	0	0	50,034
Bay De Chene	2	1	0	1	20,229
Bay Junop	2	0	0	2	9,329
Bayou Blue	6	4	0	2	41,905
Bayou Choctaw	3	2	0	1	19,979
Bayou De Fleur	2	0	0	2	22,891
Bayou des Allemands	6	5	0	1	53,302
Bayou des Glaise	3	2	0	1	33,427
Bayou Mallet	3	3	0	0	27,371
Bayou Sale	7	7	0	0	77,152
Bay St. Elaine	9	6	1	2	81,076
Belle Isle	3	1	0	2	35,149
Bivens	3	2	0	1	22,594
Black Bayou	5	2	0	3	38,187
Caillou Island	11	10	0	1	114,079
Cankton	2	2	0	0	20,256
Charenton	13	10	0	3	59,008
China	2	0	0	2	19,339
Choctaw	2	2	0	0	10,700
Dave Haas	12	11	0	1	100,268
Delacroix	4	2	0	2	40,933
Delta Duck	2	2	0	0	19,986
Delta Farms	16	15	0	1	149,059



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Drilling, handling, processing, transferring and storing operations for all liquid and gaseous petroleum products involve fire hazards which demand the best in first-aid fire protection. For years, all divisions of major oil companies have been using Ansul Dry Chemical Fire Extinguishers as their first line of fire defense There is a reason...

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- Safe for use on electrical fires, too! Even high voltages are not conducted by dry chemical stream.
- Can be recharged at scene of fire furnishing continuing protection.
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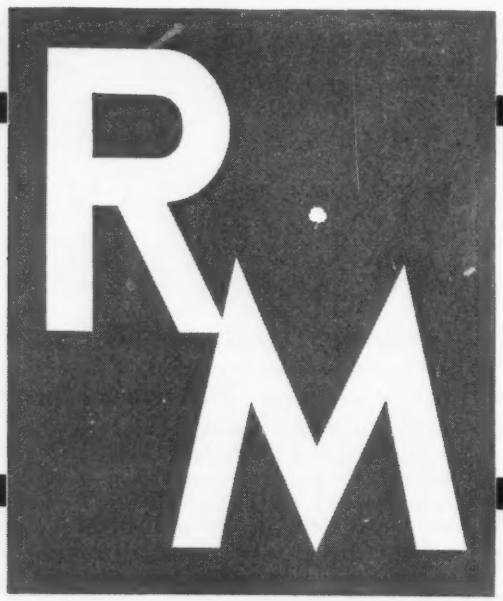

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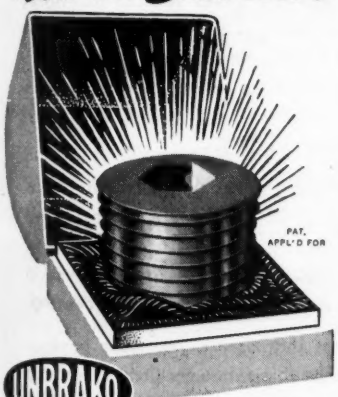

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Field—	Comp.	Oil	Gas	Dry	Footage
Dog Lake	6	2	0	4	59,035
East Hackberry	5	4	0	1	41,026
East Perkins	3	2	0	1	21,279
Edgerly	9	5	0	4	40,124
Egan	9	8	0	1	95,713
English Bayou (Gillis)	7	6	1	0	45,771
Erath	5	4	0	1	41,916
Four Isle Dome	3	1	0	2	21,843
Garden Island	3	2	0	1	23,758
Golden Meadow	35	29	0	6	191,940
Grand Bay	6	6	0	0	56,903
Hester	3	2	0	1	20,050
Holmwood	4	3	1	0	43,141
Houma	3	2	0	1	35,101
Hurricane Creek	8	8	0	0	70,998
Iberia	3	0	0	3	17,783
Iota	7	4	1	2	64,972
Iowa	4	4	0	0	35,256
Jefferson Island	2	1	0	1	17,196
LaFitte	4	2	0	2	38,916
Lake Barre	2	1	0	1	10,860
Lake Fausse Point	6	0	0	6	48,009
Lake Hatch	2	0	0	2	18,486
Lake Pelto	3	2	0	1	31,452
Leeville	5	3	0	2	56,195
Lockport	5	2	1	2	31,747
Longville	9	4	0	5	75,544
Mamou	2	2	0	0	23,642
Moss Lake	3	0	0	3	29,119
Napoleonville	5	1	0	4	37,025
North Cankton	10	7	0	3	82,846
North Tepetate	21	18	0	3	178,459
Oretta	4	2	0	2	26,359
Paradis	2	2	0	0	21,404
Pecan Island	5	3	0	2	59,930
Pine Prairie	13	9	0	4	90,660
Plumb Bob	3	2	0	1	27,042
Port Barre	15	10	0	5	105,773
Quarantine Bay	4	2	0	2	43,474
Queen Bess Island	2	0	0	2	27,946
Raceland	5	3	1	1	45,701
Reddell	6	4	0	2	60,655
Richie	11	7	1	3	38,758
St. Martinville	9	6	0	3	51,870
Savoy	2	1	0	1	18,644
Section 28	11	8	0	3	78,920
South Barataria	2	1	0	1	22,878
South Bayou Mallet	3	1	0	2	29,198
South Crowley	3	0	0	3	15,024
South Jeanerette	2	2	0	0	13,313
South Jennings	3	2	0	1	32,965
South Shuteston	4	2	0	2	42,046
Starks	2	1	0	1	6,237
Sulphur Mines	5	5	0	0	19,144
Tigre Lagoon	2	0	1	1	23,563
University	9	5	0	4	87,972
Valentine	4	2	1	1	41,292
Venice	7	7	0	0	66,489
Vinton	7	5	0	2	45,442
Week's Island	12	11	0	1	139,121
West Barataria	13	11	0	2	124,648
West Bay	6	6	0	0	58,052
W. Cote Blanche Bay	6	6	0	0	52,572
West Hackberry	4	3	1	0	35,522
West Lake Verret	2	1	0	1	8,996
White Castle	5	4	0	1	40,810
Miscellaneous	48	13	4	31	441,100
Total	580	388	14	178	4,814,242

ARKANSAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	10	1	0	9	40,121
February	7	0	0	7	33,689
March	4	1	0	3	10,119
April	8	1	0	7	24,034
May	5	0	0	5	21,132
June	9	0	0	9	35,884
July	7	0	0	7	14,876
August	14	2	0	12	60,837
September	6	0	0	6	25,985
October	9	0	0	9	32,056
November	8	1	0	7	34,680
December	10	0	0	10	50,266
Total	97	6	0	91	383,679

POWERS

TEMPERATURE REGULATOR

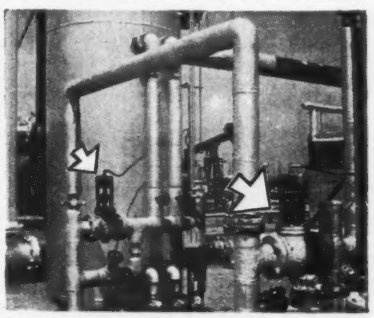
PREVENTS OVER-HEATING
•
CONTROLS HEATING OR COOLING MEDIUMS
•
ECONOMICAL and DEPENDABLE CONTROL

FOR SEPARATORS TREATERS • HEATERS also cooling water for DIESEL and GAS ENGINES and COMPRESSORS

SIMPLIFY your temperature control problems by standardizing on POWERS regulators. Use them wherever you want to maintain a constant temperature with year after year dependability of operation. Often give 10 to 25 years of service and pay back their cost several times a year.

Valve sizes ¼" to 2" have double unions; 2½ to 6" have flanged ends. Write for prices. (P-48)

Below: Regulators Controlling Separators and Treaters.



THE POWERS REGULATOR CO.

CHICAGO 14, ILL. 2720 Greenview Ave.
NEW YORK 17, N. Y. 231 E. 46th St.
LOS ANGELES 5, CAL. 1808 W. 8th St.
TORONTO, ONT. 195 Spadina Avenue

55 YEARS of TEMPERATURE CONTROL

WRITE FOR BULLETIN 329 AND PRICES

OFFICES IN 50 CITIES including
HOUSTON • DALLAS
OKLAHOMA CITY
TULSA • KANSAS CITY
DENVER
NEW ORLEANS
PITTSBURGH

MORE WORK-TIME

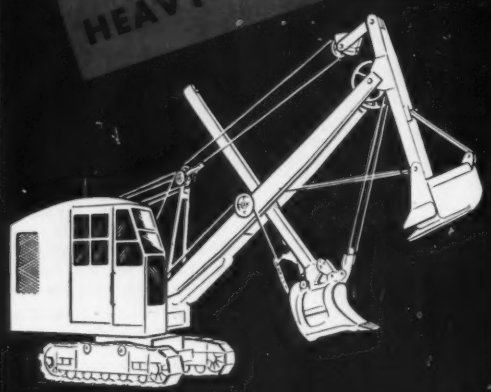
INDEPENDENT TRACTION cuts non-productive time

Here's a heavy-duty excavator that gives you the fast-working speeds and mobility you need on oil field operation. You have 2-speed traction that is independent of all other operations . . . travels, swings, hoists, raises or lowers boom all at same time. Cuts non-productive time . . . steps up production on some work as much as 50%.

Chain drive gives fast operating speeds . . . crowds up to 84' per minute . . . retracts 143' per minute. Crowd and retract cable is self-contained in boom, stays intact when boom is removed . . . speeds conversion from shovel to other attachments . . . saves time lost in reeving.

Other Koehring 205 features that assure you more production at lower costs include: double-fulcrum clutch, to reduce manual operating effort . . . heavy-duty, accessible machinery, to minimize maintenance . . . choice of crawler mounting or pneumatic tires, to suit your exact operating conditions.

Get all the facts on this versatile Koehring heavy-duty Half-Yard *today*. Write for new 28-page catalog . . . or call your nearest Koehring distributor . . . located in all major oil field centers. Ask, too, about other Koehring sizes: ¾-yd. 304 . . . 1½-yd. 605 . . . and the big 2½-yd. 1005



DUAL PURPOSE BOOM SAVES UP TO 20% ON SHOVEL, PULL-SHOVEL COMBINATION . . . .

When you have pipeline foundation trenches or drainage ditches to dig, you can quickly convert this Koehring 205 from shovel to pull shovel. Both attachments use the same boom . . . conversion equipment costs 20% less than conventional units that require two separate booms. Quick convertibility to dragline, clamshell, lift crane or pile driver further increases its all-purpose efficiency.

KOEHRING HEAVY DUTY

KOEHRING COMPANY
Milwaukee 10, Wis.

Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

with these MOBILE HEAVY-DUTY UNITS

KWIK-MIX
6-S
DANDIE

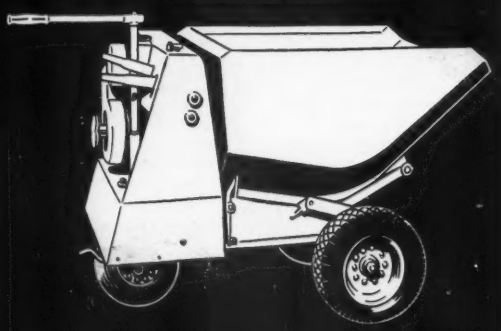
PORTABLE 1-BAG MIXER re-mixes every batch...

For top-quality concrete produced at top speed . . . on any location . . . check the extra time and money-saving advantages this handy Kwik-Mix 6-S DANDIE offers you. You get sturdy construction without overweight for frequent moves on your job . . . leaf springs and pneumatic tires cushion the rigid frame against road and operating shocks. It's smooth-trailing, easily spotted by hand at pouring-location. You get thorough-strength mix every batch because the Kwik-Mix re-mixing drum adds a lateral folding action to the customary up-and-down mixing motion . . . completely cement coats each aggregate. Automatic water-measuring tank accurately discharges water to within fraction of a pint . . . when skip raises, water valve trips automatically starting flow into drum at precise moment to eliminate clogging. Power-raised skip and Selective Skip Shaker for faster charging . . . plus tilted Flow-Line discharge chute . . . save seconds every batch, more batches per hour. One man can handle all operations.

Send for full information on this 6 cu. ft. 6-S . . . or on the 3½-S, 11-S, or 16-S DANDIES . . . or see your local Kwik-Mix distributor TODAY.

KOEHRING PRODUCT

DANDIE—Trademark Reg. U. S. Pat. Off.



KWIK-MIX MOTO-BUG TAKES HARD WORK AND HIGH COSTS OUT OF MATERIALS-HANDLING

Now you can cut handling costs way down on wheelbarrow work and all small materials-moving jobs. Kwik-Mix Moto-bug, with its 1200 lb. capacity, makes more trips per hour, because power does *all* the heavy work . . . hauls over 4 times the normal wheelbarrow load. Has speeds 1½ to 4 m.p.h., forward and reverse. No pushing . . . no pulling. Easily climbs grades to 20% with full load. Platform body available. Get all the facts on this low-cost, 3.9 h.p. Moto-Bug by returning the coupon below!

KWIK-MIX
COMPANY, PORT WASHINGTON, WISCONSIN
Koehring Subsidiary

TO: KWIK-MIX COMPANY, Dept. GO
Port Washington, Wisconsin

Please send the complete MOTO-BUG story to:

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

ARKANSAS
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	28	22	0	6	107,378
February	14	11	0	3	61,981
March	8	6	0	2	42,090
April	17	10	1	6	80,201
May	17	14	0	3	73,336
June	8	4	1	3	31,855
July	15	13	1	1	55,584
August	13	8	0	5	62,649
September	30	23	1	6	122,101
October	20	14	1	5	97,293
November	14	9	0	5	62,562
December	20	11	0	9	88,867
Total	204	145	5	54	885,897

ARKANSAS
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	38	23	0	15	147,499
February	21	11	0	10	95,670
March	12	7	0	5	52,209
April	25	11	1	13	104,235
May	22	14	0	8	94,468
June	17	4	1	12	67,739
July	22	13	1	8	70,460
August	27	10	0	17	123,486
September	36	23	1	12	148,086
October	29	14	1	14	129,349
November	22	10	0	12	97,242
December	30	11	0	19	139,133
Total	301	151	5	145	1,269,576

ARKANSAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Ashley	3	1	0	2	16,989
Benton	1	0	0	1	2,236
Chicot	1	0	0	1	3,360
Calhoun	2	1	0	1	4,838
Clark	5	0	0	5	8,843
Cleveland	2	0	0	2	8,431
Columbia	8	1	0	7	49,789
Cross	1	0	0	1	2,500
Dallas	1	0	0	1	2,443
DeSha	1	0	0	1	4,713
Grant	1	0	0	1	1,269
Hempstead	5	0	0	5	19,831
Jefferson	1	0	0	1	3,216
Lafayette	6	0	0	6	34,363
Lee	1	0	0	1	3,642
Little River	4	0	0	4	11,241
Logan	1	0	0	1	4,777
Miller	2	0	0	2	13,372
Nevada	7	0	0	7	25,993
Ouachita	16	0	0	16	51,540
Phillips	2	0	0	2	9,515
Pope	1	0	0	1	2,095
Sabine	1	0	0	1	660
St. Francis	3	0	0	3	8,186
Sevier	1	0	0	1	995
Union	18	3	0	15	84,735
White	1	0	0	1	1,969
Woodruff	1	0	0	1	1,600
Total	97	6	0	91	383,679

ARKANSAS
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Atlanta	5	3	0	2	40,965
Bear Creek	4	4	0	0	25,472
Buckner	9	8	0	1	51,986
Cairo	9	6	0	3	70,687
Cypress Lake	14	9	0	5	58,490
Fouke	5	3	0	2	23,507
Magnolia	6	4	0	2	42,472
Smackover	18	15	1	2	50,108
Spirit Lake	4	3	0	1	16,575
Stephens	11	9	0	2	34,184
Urbana	6	4	1	1	16,077
Village	17	17	0	0	108,150
Warnock Springs	3	0	2	1	22,355
Wesson	47	31	1	15	141,561
Miscellaneous	46	29	0	17	183,313
Total	204	145	5	54	885,897

MISSISSIPPI
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	9	1	0	8	73,630
February	6	0	0	6	43,967
March	6	0	0	6	36,634
April	5	0	0	5	35,305
May	7	0	0	7	51,340
June	5	0	0	5	30,893
July	7	1	0	6	64,100
August	14	1	0	13	119,922
September	13	1	0	12	83,363
October	11	0	0	11	84,881
November	7	0	0	7	48,386
December	18	1	0	17	129,309
Total	108	5	0	103	801,750

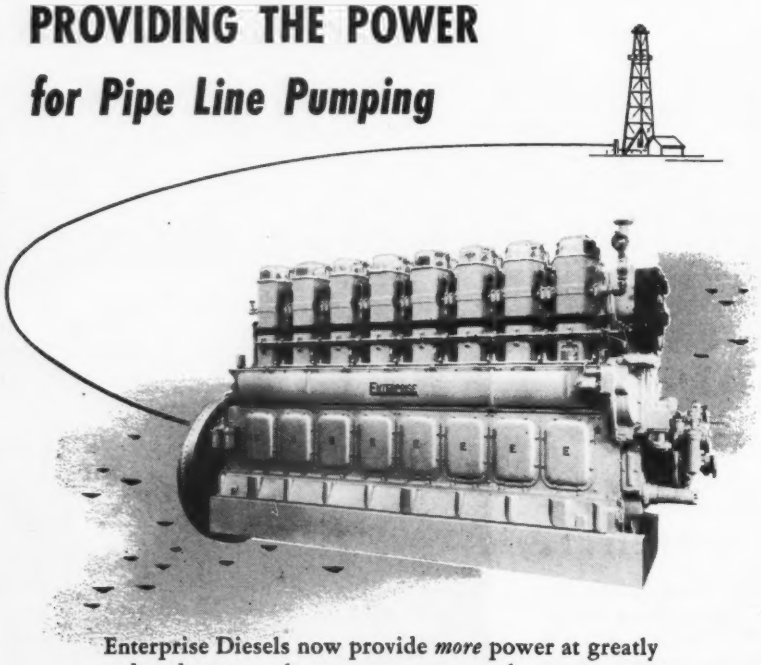
MISSISSIPPI
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	29	18	2	9	245,059
February	25	19	1	5	237,052
March	20	13	1	6	181,402
April	24	19	1	4	182,993
May	27	22	0	5	230,710
June	23	21	0	2	179,431
July	34	27	2	5	267,481
August	25	20	2	3	173,719
September	33	25	3	5	237,019
October	22	16	1	5	147,973
November	24	21	0	3	172,833
December	34	24	3	7	254,278
Total	320	245	16	59	2,509,949

MISSISSIPPI
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	38	19	2	17	318,698
February	31	19	1	11	281,019
March	26	13	1	12	218,036
April	29	19	1	9	218,298
May	34	22	0	12	282,059
June	28	21	0	7	210,324
July	41	28	2	11	331,581
August	39	21	2	16	293,641
September	46	26	3	17	320,382
October	33	16	1	16	232,854

PROVIDING THE POWER
for Pipe Line Pumping



Enterprise Diesels now provide *more* power at greatly reduced cost per horsepower to meet the most exacting demands required in pumping service. Substantial economies are offered through 1) simplicity of connection and control, 2) high torque at all speeds, and 3) elimination of transmission losses. They are designed and built to withstand heavy punishment from excessive pumping loads. Smooth, even, vibration-free operation is characteristic of this precision equipment.

Whatever your pumping power requirements, check Enterprise Diesels first. You'll find them flexible to your needs, using Diesel oil, modified crude oil, natural gas or dual-fuel. Normally aspirated or turbocharged up to 1800 HP per unit. Write or call for information on your particular power problems.

Builders of Heavy Duty Engines and Equipment Since 1886

ENTERPRISE Diesels

ENTERPRISE ENGINE & FOUNDRY CO.
18th and Florida Streets • San Francisco 10, California
With Branch Offices in Houston and Fort Worth Serving the Oil Industry

Blackie says:

"OPERATORS SURE LIKE WILSON WINCHES"

You can make some real money with Wilson Winches because they're fast operating and dependable. Wilsons are brutes for hard service and that saves you a lot of money for maintenance and downtime. Speaking of saving money, Wilson's modern assembly line production gives you a better hoist at less cost. Four sizes are available for well servicing from 3,500 to 10,000 feet. Drop us a line or call and we'll be glad to send you our latest catalog on Wilson Winches.

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The Black supply company

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WICHITA, KANSAS
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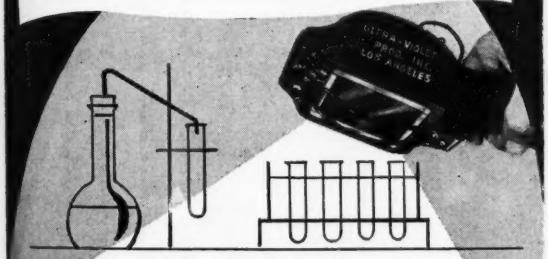
Fluorescent Analysis...



Use MINERALIGHT

for faster identification

● In the oil fields or laboratory, MINERALIGHT is proving to be of great aid in analysis. This handy Ultra-Violet light, available in portable or laboratory models, makes routine tests faster and easier. Laboratory units operate on 110 volts A.C. For information on how MINERALIGHT can aid by fluorescent analysis, write for bulletin 0-200.

Ultra Violet PRODUCTS, INC.
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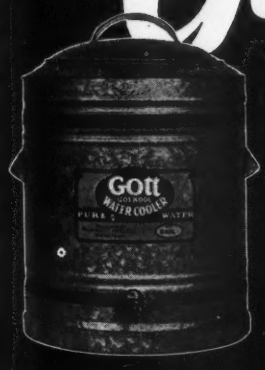
STANDARD OF THE OIL FIELDS

Gotkool

WATER CANS & COOLERS



GOTKOOL WATER COOLER
Made in 2, 3, 5, 8, 10, 15 and 20 gallon sizes with Push-Button Faucet.

GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . . . .

GOTKOOL WATER CAN
Made in 1½, 2, 3, 5, 10, 15 and 20 gallon sizes. Push Button Faucet at slight additional cost.

H. P. GOTT MFG. CO.
WINFIELD, KANSAS

KEEP PURE DRINKING WATER ALWAYS HANDY

INSIST ON THE GENUINE
Look for the Blue and Black Label with the name GOTKOOL in Red

Month—	Comp.	Oil	Gas	Dry	Footage
November	31	21	0	10	221,220
December	52	25	3	24	383,587
Total	428	250	16	*162	3,311,690

*Includes 1 service well.

MISSISSIPPI
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Adams	13	1	0	12	100,025
Attala	1	0	0	1	4,512
Carroll	1	0	0	1	5,283
Chickasaw	1	0	0	1	2,785
Claiborne	1	0	0	1	10,015
Clarke	1	0	0	1	4,999
Copiah	3	0	0	3	30,830
Covington	1	0	0	1	3,117
Forrest	2	0	0	2	11,450
Franklin	4	1	0	3	44,738
George	2	0	0	2	11,857
Greene	4	0	0	4	20,844
Harrison	1	0	0	1	9,010
Hinds	2	0	0	2	9,458
Holmes	2	0	0	2	12,157
Humphreys	1	0	0	1	7,008
Issaquena	5	0	0	5	20,902
Jasper	1	0	0	1	7,335
Jefferson	4	0	0	4	35,281
Jones	3	1	0	2	23,211
Lamar	1	0	0	1	10,663
Lauderdale	1	0	0	1	5,038
Leake	1	0	0	1	5,522
Lee	1	0	0	1	1,809
Lincoln	6	0	0	6	65,266
Madison	2	0	0	2	14,447
Marion	4	1	0	3	40,032
Perry	2	0	0	2	18,036
Rankin	3	0	0	3	23,632
Scott	2	0	0	2	17,175
Sharkey	6	0	0	6	23,969
Simpson	1	0	0	1	9,663
Stone	2	0	0	2	22,824
Walthall	4	0	0	4	45,490
Warren	3	0	0	3	15,086
Washington	3	0	0	3	13,331
Wayne	7	1	0	6	180
Yazoo	6	0	0	6	38,827
Total	108	5	0	103	801,750

MISSISSIPPI
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Baxterville	40	36	1	3	351,406
Brookhaven	21	17	0	4	219,944
Carthage Point	5	5	0	0	51,352
Cranfield	10	10	0	0	94,293
Eucutta	5	2	0	3	27,481
Gwinville	19	7	10	2	158,994
Heidelberg-East	5	4	0	1	34,364
Heidelberg-West	12	11	0	1	62,019
Hub	8	5	1	2	76,536
LaGrange	63	50	0	13	395,994
LaGrange-South	5	3	0	2	32,490
Langsdale	5	4	0	1	19,152
Mallalieu	54	45	0	9	567,860
Ovett	4	0	0	4	47,753
Pine Ridge	9	7	0	2	55,928
Soso	5	1	3	1	33,751
Yellow Creek	41	36	0	5	199,323
Miscellaneous	9	2	1	6	81,209
Total	320	245	16	59	2,509,949

ALABAMA
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	10,618
February	1	0	0	1	2,727
April	2	0	0	2	12,626
May	1	0	0	1	3,384
June	1	0	0	1	10,630
July	2	0	0	2	14,116
August	4	0	0	4	17,915
September	1	0	0	1	3,997
October	1	0	0	1	6,018
November	3	0	0	3	18,719
December	1	0	0	1	2,318
Total	19	0	0	19	103,266

ALABAMA
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
September	1	0	0	1	3,912
December	1	1	0	0	3,290
Total	2	1	0	1	7,202

IT'S *Naylor* LIGHT-WEIGHT PIPE

• For gas and oil lines • For gas and oil gathering lines • For water lines • For sludge lines • For vacuum lines • For syphon pipe • For tank gauge pipe • For tank swing pipe • Threaded surface casing

Sizes 4" to 30" in diameter with all types of fittings, connections and fabrication.

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Naylor Pipe
Mid-Continent Supply Company
Ft. Worth, Texas and Branches
Exclusive distributors in
Mid-Continent and Gulf Coast Areas

ALABAMA
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	10,618
February	1	0	0	1	2,727
April	2	0	0	2	12,624
May	1	0	0	1	3,384
June	1	0	0	1	10,830
July	2	0	0	2	14,116
August	4	0	0	4	17,915
September	2	0	0	2	7,909
October	1	0	0	1	6,018
November	3	0	0	3	18,719
December	2	1	0	1	5,608
Total	21	1	0	20	110,468

ALABAMA
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Baldwin	2	0	0	2	14,948
Barbour	3	0	0	3	8,429
Choctaw	1	0	0	1	3,235
Clarke	1	0	0	1	5,016
Crenshaw	1	0	0	1	10,830
Escambia	4	0	0	4	23,846
Franklin	1	0	0	1	1,610
Geneva	1	0	0	1	3,997
Mobile	3	0	0	3	27,109
Sumpter	1	0	0	1	3,706
Washington	1	0	0	1	540
Total	19	0	0	19	103,266

ALABAMA
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Gilbertown	2	1	0	1	7,202
Total	2	1	0	1	7,202

FLORIDA
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	17,410
February	1	0	0	1	4,235
March	1	0	0	1	2,503
April	1	0	0	1	229
May	2	0	0	2	17,046
June	2	0	0	2	3,130
July	4	0	0	4	25,103
August	2	0	0	2	8,490
September	2	0	0	2	6,027
October	3	0	0	3	21,990
November	3	0	0	3	13,384
Total	23	0	0	23	119,547

FLORIDA
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	1	0	0	11,574
April	1	0	0	1	11,709
September	1	1	0	0	11,588
Total	3	2	0	1	34,871

FLORIDA
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	1	0	2	28,984
February	1	0	0	1	4,235
March	1	0	0	1	2,503
April	2	0	0	2	11,938
May	2	0	0	2	17,046
June	2	0	0	2	3,130
July	4	0	0	4	25,103
August	2	0	0	2	8,490
September	3	1	0	2	17,615
October	3	0	0	3	21,990
November	3	0	0	3	13,384
Total	26	2	0	24	154,418

FLORIDA
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Collier	1	0	0	1	12,120
Columbia	2	0	0	2	7,747
Gadsden	2	0	0	2	8,462
Gilchrist	1	0	0	1	3,360
Hardee	2	0	0	2	24,153
Holmes	1	0	0	1	4,912
Lafayette	1	0	0	1	4,235
Liberty	1	0	0	1	4,268
Osceola	3	0	0	3	13,826
Pinellas	1	0	0	1	11,507
Suwanee	2	0	0	2	3,988
Taylor	1	0	0	1	6,264
Volusia	1	0	0	1	1,670

You Can Always Count on Briggs & Stratton

- To improve still further and make even better the world's finest 4-cycle, single-cylinder, air-cooled gasoline engines.
- To maintain and even raise the high standards set for materials, workmanship, methods, and precision production.
- To expand and still further improve the world-wide organization of factory approved service stations.
- To continue to be accepted as "preferred power" everywhere for industrial, construction, railroad, and farm equipment.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES
World Wide FACTORY SUPERVISED SERVICE

County—	Comp.	Oil	Gas	Dry	Footage
Walton	2	0	0	2	7,980
Washington	2	0	0	2	5,055
Total	23	0	0	23	119,547

FLORIDA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Sunniland	3	2	0	1	34,871
Total	3	2	0	1	34,871

GEORGIA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
March	1	0	0	1	3,916
April	1	0	0	1	4,955
August	1	0	0	1	4,910
Total	3	0	0	3	13,781

GEORGIA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Camden	1	0	0	1	4,955
Colquitt	1	0	0	1	4,910
Echols	1	0	0	1	3,916
Total	3	0	0	3	13,781

CALIFORNIA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	48	19	1	28	211,870
February	30	9	0	21	138,757
March	20	4	0	16	79,663
April	47	14	0	33	195,558
May	39	14	0	25	195,335
June	42	13	1	28	147,107
July	40	18	2	20	226,372
August	41	7	1	33	219,044
September	33	5	1	27	168,323
October	66	2	0	64	291,773
November	49	8	0	41	206,268
December	37	6	1	30	163,855
Total	492	119	7	366	2,243,905

CALIFORNIA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	197	192	3	2	660,617
February	190	181	3	6	639,960
March	200	188	2	10	692,000
April	214	203	0	11	727,618
May	225	214	0	11	797,437
June	184	176	0	8	656,678
July	198	185	2	11	683,415
August	219	203	1	15	794,529
September	184	181	1	2	591,396
October	203	199	1	3	752,117
November	194	186	0	8	687,690
December	176	168	1	7	651,545
Total	2,384	2,276	14	94	8,335,011

CALIFORNIA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	245	211	4	30	872,487
February	220	190	3	27	778,717
March	220	192	2	26	771,663
April	261	217	0	44	923,176
May	264	228	0	36	992,772
June	226	189	1	36	803,785
July	238	203	4	31	909,787
August	260	210	2	48	1,013,573
September	217	186	2	29	759,719
October	269	201	1	67	1,043,890
November	243	194	0	49	893,947
December	213	174	2	37	815,400
Total	2,876	2,395	21	460	10,578,916

CALIFORNIA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Butte	1	0	0	1	2,280
Colusa	3	0	0	3	13,467
Contra Costa	3	0	1	2	12,063
Fresno	16	7	0	9	105,117
Glenn	4	0	0	4	11,400
Humboldt	1	0	0	1	5,556
Kern	222	45	2	175	1,000,928
Kings	4	0	0	4	18,970
Los Angeles	51	21	0	30	276,262
Madera	1	0	0	1	3,162
Merced	3	0	0	3	9,638
Monterey	31	9	0	22	78,022
Orange	16	1	0	15	86,141
Sacramento	1	0	0	1	2,600
San Benito	5	2	0	3	16,047
San Bernardino	2	0	0	2	1,647
San Diego	1	0	0	1	2,248
San Joaquin	1	0	0	1	4,319
San Luis Obispo	31	3	0	28	99,515
Santa Barbara	52	19	0	33	218,919
Solano	7	0	3	4	29,494
Sonoma	3	2	0	1	4,027
Tulare	5	0	0	5	22,009
Ventura	21	10	0	11	184,742
Yolo	7	0	1	6	35,334
Total	492	119	7	366	2,243,905

WASHINGTON

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
April	1	0	0	1	6,278
June	2	0	0	2	9,109
August	1	0	0	1	5,935
October	1	0	0	1	5,600
November	1	0	0	1	2,350
Total	6	0	0	6	29,272

MONTANA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	5	1	0	4	25,282
February	1	0	0	1	6,058
June	1	0	0	1	2,950
July	4	1	0	3	10,837
August	4	0	0	4	13,650
September	1	0	0	1	2,220
October	5	1	0	4	16,854
November	4	0	0	4	8,177
December	5	1	0	4	17,365
Total	30	4	0	26	103,402

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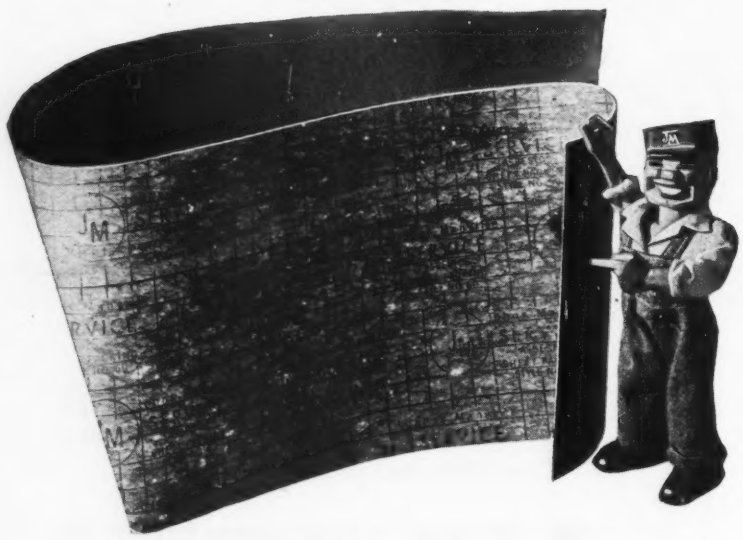

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Dry	Footage
41	206,248
30	163,855
366	2,243,905

Months	
Dry	Footage
2	660,617
6	639,900
10	692,000
11	727,618
11	797,437
8	656,678
11	683,415
15	794,529
2	591,396
3	752,117
8	687,690
7	651,545
94	8,335,011

Months	
Dry	Footage
30	872,487
27	778,717
26	771,663
44	923,176
36	992,772
36	803,785
31	909,787
48	1,013,573
29	759,719
67	1,043,890
49	893,947
37	815,400
460	10,578,916

Counties	
Dry	Footage
1	2,280
3	13,487
2	12,063
9	105,117
4	11,400
1	5,556
175	1,000,926
4	18,970
30	276,262
1	3,163
3	9,636
22	78,022
15	86,141
1	2,600
3	16,047
2	1,647
1	2,248
1	4,319
28	99,515
33	218,919
4	29,494
1	4,027
5	22,009
11	184,742
6	35,334
366	2,243,905

Months	
Dry	Footage
1	6,278
2	9,109
1	5,935
1	5,600
1	2,350
6	29,272

Months	
Dry	Footage
4	25,282
1	6,058
1	2,950
3	10,837
4	13,659
1	2,220
4	16,854
4	8,177
4	17,365
26	103,402

MONTANA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	18	12	3	3	36,757
February	15	10	3	2	38,289
March	20	13	3	4	51,288
April	19	6	7	6	43,082
May	35	23	6	6	78,310
June	24	14	7	3	56,837
July	32	20	8	4	85,609
August	31	17	5	9	67,288
September	27	15	5	7	57,086
October	37	20	7	10	72,304
November	37	26	9	2	86,651
December	20	11	6	3	42,496
Total	315	187	69	59	715,997

MONTANA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	23	13	3	7	62,039
February	16	10	3	3	44,347
March	20	13	3	4	51,288
April	19	6	7	6	43,082
May	35	23	6	6	78,310
June	25	14	7	4	59,787
July	36	21	8	7	96,446
August	35	17	5	13	80,947
September	28	15	5	8	59,306
October	42	21	7	14	89,158
November	41	26	9	6	94,828
December	25	12	6	7	59,861
Total	345	191	69	85	819,399

MONTANA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Blaine	4	0	0	4	8,777
Carter	4	0	0	4	7,566
Choteau	1	0	0	1	620
Fergus	2	0	0	2	5,837
Garfield	1	0	0	1	6,943
Hill	1	0	0	1	6,212
Liberty	3	0	0	3	11,678
Musselshell	6	4	0	2	25,180
Petroleum	1	0	0	1	1,068
Rosebud	1	0	0	1	6,058
Teton	4	0	0	4	15,474
Toole	1	0	0	1	2,065
Yellowstone	1	0	0	1	5,924
Total	30	4	0	26	103,402

MONTANA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Cut Bank	83	53	8	22	260,624
Cat Creek	16	10	0	6	33,582
Apex	1	0	1	0	2,025
Big Wall	2	1	0	1	6,101
Elk Basin	3	3	0	0	17,025
Bowes	3	0	3	0	3,277
Bowdoin	49	0	49	0	43,941
Dry Creek	1	1	0	0	6,263
Frannie	1	1	0	0	3,695
Kevin-Sunburst	103	83	3	17	174,740
Northwest Elk Basin	12	9	0	3	56,118
Mosser	3	1	1	1	2,672
McLaren	3	0	1	2	1,888
Pondera	15	13	0	2	29,395
Ragged Point	6	1	0	5	26,771
Reagan Nose	6	6	0	0	22,496
Rattlesnake Butte	1	1	0	0	2,694
Soap Creek	1	1	0	0	4,470
Utopia	5	2	3	0	16,185
Whitlash	1	1	0	0	2,035
Total	315	187	69	59	715,997

WYOMING

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	1	0	2	7,808
February	3	0	0	3	12,055
March	4	2	0	2	25,101
April	5	2	0	3	21,062
May	11	5	0	6	51,857
June	7	3	1	3	28,861
July	11	4	0	7	44,995
August	10	1	0	9	46,100
September	11	1	0	10	43,312
October	16	4	1	11	69,979
November	15	2	0	13	66,395
December	8	0	1	7	29,229
Total	104	25	3	76	446,754

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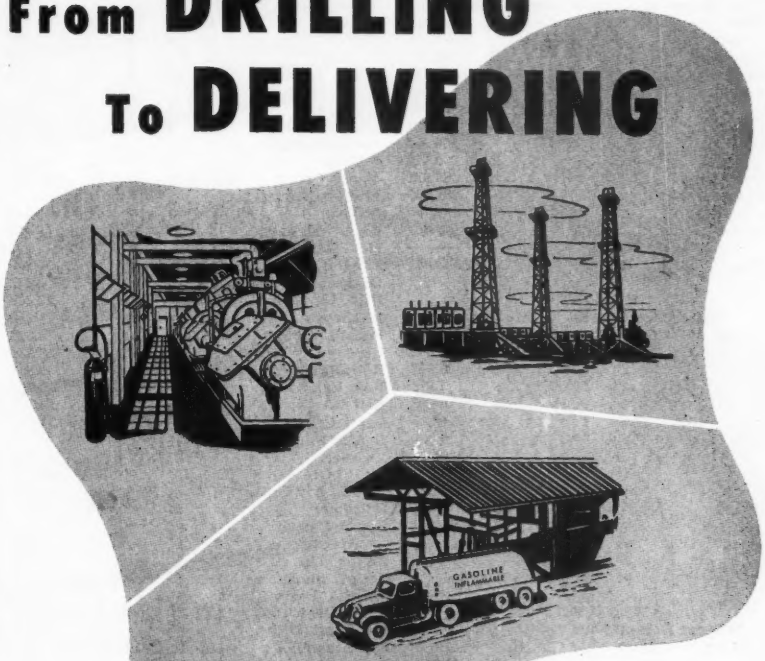

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WYOMING
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	44	36	1	7	186,885
February	17	14	0	3	68,287
March	19	15	0	4	76,269
April	23	20	0	3	95,590
May	40	27	0	13	162,959
June	34	27	0	7	141,001
July	50	33	0	17	183,055
August	60	45	1	14	260,174
September	33	28	0	5	166,931
October	64	51	1	12	282,383
November	55	43	0	12	257,745
December	41	30	1	10	172,663
Total	480	369	4	107	2,053,942

WYOMING
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	47	37	1	9	194,693
February	20	14	0	6	80,342
March	23	17	0	6	101,370
April	28	22	0	6	116,652
May	51	32	0	19	214,816
June	41	30	1	10	169,862
July	61	37	0	24	228,050
August	70	46	1	23	306,274
September	44	29	0	15	210,243
October	80	55	2	23	352,362
November	70	45	0	25	324,140
December	49	30	2	17	201,892
Total	584	394	7	183	2,500,696

WYOMING
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Albany	4	1	0	3	11,277
Big Horn	4	2	0	2	12,420
Campbell	1	1	0	0	9,945
Carbon	12	3	1	8	43,918
Converse	1	1	0	0	8,380
Crook	8	0	0	8	33,030
Fremont	7	1	0	6	30,863
Goshen	2	0	0	2	9,933
Hot Springs	3	1	0	2	7,522
Johnson	1	1	0	0	7,726
Laramie	2	0	0	2	5,477
Lincoln	3	0	0	3	17,806
Natrona	7	1	0	6	31,507
Niobrara	14	3	0	11	57,672
Park	11	5	2	4	51,828
Platte	2	0	0	2	1,023
Sublette	1	0	0	1	9,544
Sweetwater	6	3	0	3	34,725
Teton	2	0	0	2	1,717
Uinta	1	0	0	1	725
Washakie	1	0	0	1	3,415
Weston	11	2	0	9	56,090
Total	104	25	3	76	446,754

WYOMING
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Ant Hills	6	2	0	4	28,259
Adon	2	0	0	2	18,549
Badger Basin	1	1	0	0	8,495
Big Muddy	16	14	0	2	71,766
Beaver Creek	2	0	1	1	18,373
Big Hollow	2	0	0	2	3,628
Bridge Creek	1	0	0	1	2,922
Byron	1	1	0	0	5,493
Black Mountain	1	1	0	0	4,198
Circle Ridge	6	6	0	0	5,810
Crystal Creek	2	1	0	1	2,028
Cole Creek	2	2	0	0	16,019
Church Buttes	1	0	1	0	13,016
Dallas Derby	3	2	0	1	3,537
Elk Basin	16	16	0	0	97,401
East Antelope	1	0	0	1	2,282
East Warm Springs	2	2	0	0	2,027
East Lance Creek	2	2	0	0	7,811
Fiddler Creek	1	1	0	0	4,529
Frannie	13	13	0	0	45,772
Garland	19	19	0	0	81,693
Gebo	7	7	0	0	35,837
Grass Creek	2	2	0	0	8,893
Gooseberry	1	1	0	0	6,193
Hamilton	24	22	0	2	73,842
Hatfield	4	4	0	0	24,479
Herrick	2	2	0	0	7,380
Heart Mountain	1	0	1	0	2,641
Hidden Dome	1	1	0	0	4,839
Horse Creek	7	7	0	0	38,739
Hudson	6	6	0	0	10,532
Kirby Creek	6	5	0	1	18,221
LaBarge	2	2	0	0	2,182
Little Laramie	4	4	0	0	14,976
Little Buck Creek	5	4	0	1	19,383
Lost Soldier	9	8	0	1	51,932
Little Buffalo Basin	4	4	0	0	18,881
Mush Creek	139	90	0	49	564,317
Middle Baxter Basin	2	0	0	2	5,549
North LaBarge	3	3	0	0	6,482
No. Sage Creek	1	1	0	0	2,525
Oregon Basin	14	14	0	0	59,200
Osage	2	1	0	1	1,344
Pilot Butte	4	2	0	2	27,426
Pitchfork	3	3	0	0	11,355
Poison Spider	7	6	0	1	8,328
Quealy	2	2	0	0	10,931
Rock Creek	2	0	0	2	9,687
Rex Lake	1	1	0	0	6,103
Salt Creek	7	6	0	1	19,106
Sand Creek	10	10	0	0	71,553
South Spring Creek	5	3	0	2	23,952
Skull Creek	31	16	0	15	100,305
Steamboat Butte	6	6	0	0	40,162
Shoshone	1	0	0	1	6,105
South Casper Creek	5	2	0	3	11,834
Silver Tip	5	5	0	0	36,061
South Shoshone	1	1	0	0	3,818
So. Elk Basin	4	4	0	0	28,560
Sand Draw	3	3	0	0	22,867
So. Sand Draw	1	0	1	0	8,956
So. Steamboat	1	0	0	1	7,008
Taylor Sussex	1	0	0	1	8,424
Torchlight	11	10	0	1	38,554
Table Rock	1	0	0	1	4,020
Worland	7	7	0	0	72,230
Wagonhound	2	2	0	0	9,377
Warm Springs	2	0	0	2	3,259
Wertz	5	4	0	1	34,703
Waugh	1	1	0	0	3,944
Winkleman	3	3	0	0	12,056
West Mule Creek	2	1	0	1	4,194
Total	480	369	4	107	2,053,942

COLORADO
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	0	0	3	9,269
February	3	0	0	3	10,319
March	2	0	0	2	6,299
April	2	0	0	2	9,169
June	5	0	0	5	8,352
July	9	0	2	7	37,503
August	1	0	0	1	2,801
September	5	1	0	4	23,798
October	8	0	0	8	37,559
November	2	0	0	2	2,829
December	6	0	1	5	20,199
Total	46	1	3	42	168,097

COLORADO
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	29	29	0	0	254,522
February	13	11	0	2	78,592
March	11	11	0	0	70,906
April	11	10	0	1	64,427
May	22	21	1	0	139,122
June	10	10	0	0	65,548
July	16	16	0	0	102,852
August	12	12	0	0	77,202
September	5	3	2	0	29,453
October	14	12	2	0	84,589
November	10	7	0	3	41,006
December	8	6	2	0	51,547
Total	161	148	7	6	1,059,766

COLORADO
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	32	29	0	3	263,791
February	16	11	0	5	88,911
March	13	11	0	2	77,205
April	13	10	0	3	73,596
May	22	21	1	0	139,122
June	15	10	0	5	73,900
July	25	16	2	7	140,355
August	13	12	0	1	80,003
September	10	4	2	4	53,251
October	22	12	2	8	122,148
November	12	7	0	5	43,835
December	14	6	3	5	71,746
Total	207	149	10	48	1,227,863

COLORADO
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Adams	2	0	0	2	10,302
Archuleta	5	0	0	5	6,415
Baca	3	0	0	3	15,159
Dolores	2	0	0	2	8,015
Elbert	1	0	0	1	2,492
Jackson	1	0	0	1	1,150
Kit Carson	1	0	0	1	1,040
La Plata	2	0	0	2	7,245
Las Animas	3	0	0	3	11,329
Larimer	1	0	0	1	1,919
Mesa	2	0	0	2	14,121
Moffat	6	1	0	5	20,209
Montezuma	6	0	2	4	21,823
Morgan	1	0	0	1	1,072
Montrose	2	0	0	2	1,030
Ouray	1	0	0	1	1,611
Routt	2	0	1	1	11,212
Rio Blanco	5	0	0	5	31,943
Total	46	1	3	42	168,097

COLORADO
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Rangely	147	145	0	2	1,001,838
Elk Springs	2	1	0	1	13,080
Barker Creek	1	0	1	0	9,560
Garmesa	1	0	1	0	4,241
Chromo	4	1	0	3	2,217
East Hiawatha	1	0	1	0	4,397
Powder Wash	1	0	1	0	2,928
West Hiawatha	1	0	1	0	4,601
Douglas Creek	2	0	2	0	9,929
Wilson Creek	1	1	0	0	6,975
Total	161	148	7	6	1,059,766

UTAH
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	731
February	2	0	0	2	5,240
March	1	0	0	1	8,678
April	2	0	0	2	14,888
May	2	0	1	1	12,993
June	0	0	0	0	0
July	1	0	1	0	6,090
August	1	0	1	0	4,493
September	2	0	0	2	4,463
October	2	1	0	1	8,645
November	1	1	0	0	1,514
December	3	0	0	3	6,779
Total	18	2	3	13	74,514

UTAH
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Box Elder	1	0	0	1	2,013
Carbon	1	0	1	0	10,980
Emery	2	0	0	2	12,118
Grand	2	0	1	1	6,316
San Juan	5	1	1	3	19,653
Sevier	1	0	0	1	4,493
Tooele	1	0	0	1	3,115
Uinta	5	1	0	4	15,826
Total	18	2	3	13	74,514

SOUTH DAKOTA
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
April	1	0	0	1	1,365
August	1	0	0	1	3,070
Total	2	0	0	2	4,435

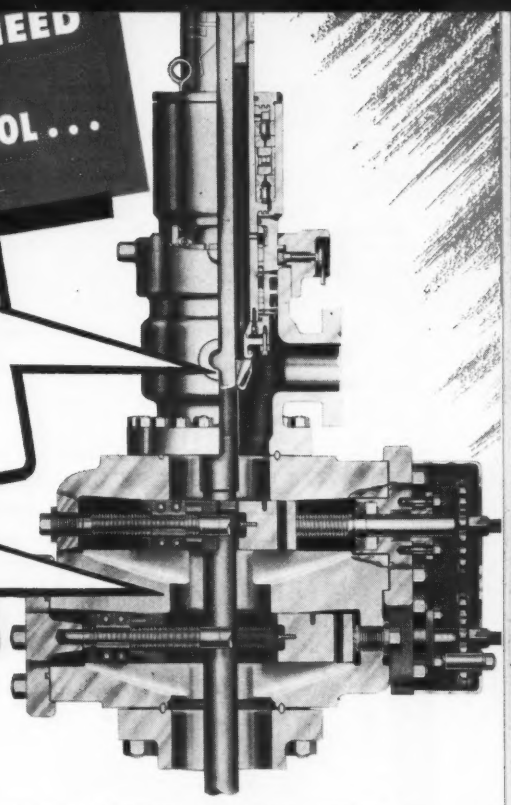
OKLAHOMA
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	85	14	2	69	362,468
February	52	9	3	40	234,717
March	61	16	0	45	256,220
April	58	10	3	45	241,539
May	75	11	3	61	322,166
June	78	15	4	59	337,762
July	68	9	2	57	287,828
August	84	15	4	65	384,863
September	69	7	2	60	278,256

HERE'S EVERYTHING YOU NEED FOR COMPLETE PRESSURE CONTROL . . .

THE SHAFFER COMBINATION ROTATING BLOW-OUT PREVENTER AND STRIPPER

THE SHAFFER DOUBLE CELLAR CONTROL GATE



THAT'S right—this one compact Shaffer Hook-Up meets your every requirement for maximum safety, simplicity and wide-range adaptability. Check over its features. You'll find it unsurpassed for modern drilling operations . . .

PERMITS ROTATING UNDER PRESSURE—in both right or left hand directions. The Shaffer Combination Rotating Blow-Out Preventer and Stripper maintains its pressure-tight seal *continuously*, even around varying diameters and shapes. It seals off around the kelly, whether square, hexagonal or octagonal . . . and because the kelly and sealing unit rotate *together*—not one rotating inside the other—a tight seal is maintained with practically no wear while operating the kelly. Also, of course, the unit seals around any other portion of the rotating drill string with equal safety and simplicity!

SEALS WHEN RUNNING PIPE UNDER PRESSURE—both in and out of the hole. Adjustment of the Stripper Rubber to different diameters and shapes is completely automatic—no manual operations are necessary. In addition to the kelly, the unit automatically adjusts itself to seal off around all other elements* in the drill string—pipe, couplings, upsets, tool joints and drill collars. Therefore, no special sealing operations around the pipe are necessary when stripping it in or out or making connections, thus simplifying rig operations!

**Except such abnormally large diameters as bit or reamer.*

PROVIDES SHUT-OFF WITH PIPE OUT OF HOLE. The lower compartment of the Shaffer Double Cellar Control Gate is equipped with complete shut-off rams for closing open hole, thus permitting complete shut-off with pipe out of the well. All closing and opening operations can be made by the driller—or from any other desired location—with choice of air, hydraulic, steam or electric drives, *plus manual standby operation in case of power failure!*

PROVIDES DOUBLE SHUT-OFF WITH PIPE IN HOLE. The upper compartment of the Shaffer Double Cellar Control Gate is equipped with rams for closing around the pipe. This, in combination with the continuous seal provided by the Shaffer Combination Rotating Blow-Out Preventer and Stripper, provides *double* protection in pressure emergencies . . . a *double* safeguard for your well investment!

The above is only a brief outline of the *complete* pressure protection this Shaffer Hook-Up provides. The Shaffer Combination Rotating Blow-Out Preventer and Stripper is *fully automatic* in operation, maintaining its pressure-tight seal *continuously* around the various shapes and diameters in the drill string with no manual adjustments or attention of any kind. Pressure emergencies just can't happen too fast for this unit because it is *always* sealed off around the drill string as long as pipe is in the hole, *instantly* ready for pressure protection!

25 YEARS OF OIL TOOL LEADERSHIP

And the Shaffer Double Cellar Control Gate closes off open hole and gives additional protection on even the most difficult pressure operations—*in a minimum of space.* Its positive mechanically-operated rams do not creep and require no "locking" or other secondary operations to hold them closed. They *stay* closed where they are set. Rams are quick and easy to change . . . ram compartments are self-draining, mud-free . . . and there are many other vital features!

No matter what your pressure control requirements, get the full Shaffer story before you decide. No other equipment provides *such* complete protection . . . in *such* compact space . . . with *such* positive, trouble-free dependability!

See the Shaffer section, pages 3843 to 3894, of your Composite Catalog!

Send for your free Shaffer Catalog!

SHAFFER

HIGH PRESSURE DRILLING AND CONTROL EQUIPMENT • FISHING TOOLS THAT EXCE

SHAFFER TOOL WORKS, Brea, California • California Service Shops: Santa Fe Springs and Ta
HOUSTON, TEXAS, 6006 Navigation Blvd. • ODESSA, TEXAS, 1925 West Second Street
OKLAHOMA CITY, OKLAHOMA, Acme Oil Tool Company, 1001 S. E. 29th Street
EXPORT SALES OFFICE: Shaffer Tool Works, 500 Fifth Avenue, New York, N. Y., U.S.A.

Month—	Comp.	Oil	Gas	Dry	Footage
October	73	9	3	61	285,688
November	58	15	0	43	295,519
December	70	14	3	53	344,866
Total	831	144	29	658	3,631,892

OKLAHOMA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	278	184	21	73	914,724
February	201	138	13	50	671,311
March	251	177	12	62	857,813
April	259	182	10	67	847,399
May	268	170	15	83	871,509
June	314	211	14	89	1,046,172
July	274	161	16	97	924,890
August	320	195	38	87	1,100,804
September	306	201	22	83	1,112,724
October	344	212	37	95	1,230,015
November	317	221	14	82	1,135,777
December	330	221	17	92	1,170,375
Total	3,462	2,273	229	960	11,883,513

OKLAHOMA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	363	198	23	142	1,277,192
February	253	147	16	90	906,028
March	312	193	12	107	1,114,033
April	317	192	13	112	1,088,938
May	343	181	18	144	1,193,675
June	392	226	18	148	1,383,934
July	342	170	18	154	1,212,718
August	404	210	42	152	1,485,667
September	375	208	24	143	1,390,980
October	417	221	40	156	1,515,703
November	375	236	14	125	1,431,296
December	400	235	20	145	1,515,241
Total	4,293	2,417	258	*1,618	15,515,405

*Includes 30 service wells.

OKLAHOMA

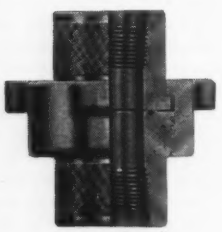
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Beckham	4	2	0	2	33,970

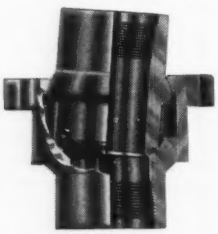
SOLVING MUD PROBLEMS

Case History #6

YALE UNIONS



Conventional



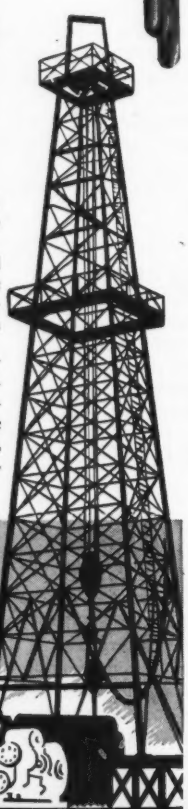
Misaligning

Yale Conventional and Misaligning Unions are designed and manufactured for water, mud, oil, steam and gas service under a wide range of pressures.

The Yale Conventional Union incorporates a synthetic, oil resistant "O"-Ring assuring positive pressure seals. These "O"-Rings will last indefinitely and will seal against recommended pressures even if mating surfaces of the union become damaged.

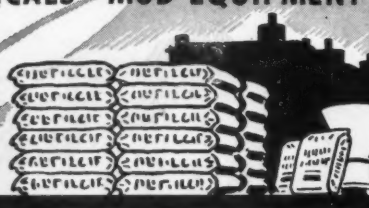
The Yale Misaligning Union is designed for use on rotary hose connections, mud lines, headers, pipe lines and other installations subject to expansion and vibration. This union permits up to 7½ degree lateral movement. Pressure seals are positive, without excessive tightening of the connecting nut, so that a certain amount of "swivel" is retained in the union.

DETAILED INFORMATION ON REQUEST



"ONLY MUD" DRILLING MUDS, CHEMICALS—MUD EQUIPMENT

MP INC.



MUD PRODUCTS, INC.

PHILTOWER BLDG. TULSA 3, OKLA.

County—	Comp.	Oil	Gas	Dry	Footage
Caddo	8	1	2	5	76,448
Carter	13	3	2	8	57,835
Cleveland	12	3	0	9	91,081
Comanche	14	1	1	12	20,014
Cotton	75	3	1	71	161,464
Creek	26	6	0	20	78,671
Garfield	6	0	0	6	29,049
Garvin	56	18	0	38	358,001
Grady	11	6	0	5	90,190
Grant	6	2	0	4	16,909
Greer	6	0	0	6	12,655
Hughes	59	5	7	47	194,148
Jackson	7	0	0	7	28,263
Jefferson	16	1	0	15	59,287
Kay	17	1	2	14	66,738
Kiowa	11	1	0	10	15,392
Lincoln	52	5	1	46	231,357
Logan	32	4	0	28	177,860
Love	6	0	0	6	32,617
McClain	19	9	0	10	153,799
Major	5	3	0	2	35,365
Murray	7	1	0	6	19,222
Noble	32	2	0	30	155,383
Okfuskee	40	8	1	31	140,041
Oklahoma	40	21	1	18	245,027
Okmulgee	4	0	0	4	10,435
Osage	28	2	1	25	76,592
Pawnee	12	2	1	9	40,322
Payne	28	6	3	19	120,375
Pontotoc	20	4	3	13	56,234
Pottawatomie	27	6	0	21	131,313
Seminole	39	7	0	32	134,656
Stephens	47	11	2	34	279,036
Tillman	15	0	0	15	46,212
Miscellaneous	31	0	1	30	155,919
Total	831	144	29	658	3,631,892

OKLAHOMA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Ada Dist., East	15	9	0	6	22,047
Alabama, SW.	10	7	0	3	30,522
Allen District	28	17	4	7	68,327
Alma, North	6	6	0	0	32,727
Altus	7	6	0	1	10,777
Antioch & NE.	12	7	0	5	71,411
Antioch, E. & SE.	8	3	0	5	46,600
Antioch, SW.	38	34	0	4	258,078
Apache	5	4	0	1	18,376
Asher & So. & W.	9	3	2	4	31,730
Avoca & SW.	5	0	0	5	21,509
Aylesworth	5	4	0	1	14,250
Backius	5	4	0	1	5,253
Bald Hill	13	5	1	7	19,146
Bearden, NW.	7	2	2	3	24,405
Bebee & East	15	8	0	7	39,298
Beggs Dist., No. & So.	9	5	1	3	18,835
Bethel, West	16	14	2	0	51,669
Big Horse	16	12	1	3	19,238
Blackwell Dist. & So.	5	4	0	1	16,820
Blakely & No.	6	1	4	1	10,349
Bowlegs	10	4	0	6	41,061
Bowlegs & W.	13	10	0	3	14,165
Brady, East	14	13	0	1	65,459
Brock	6	3	0	3	10,409
Brock, West	21	19	0	2	88,134
Brown & East	6	5	0	1	29,427
Burbank	8	4	0	4	21,355
Cache Creek Dist.	57	37	0	20	78,161
Camp & NW.	9	8	0	1	49,422
Cary	22	17	0	5	69,197
Castle, East	22	20	0	2	72,861
Cement & East	118	83	7	28	350,741
Centerpoint & South	7	4	2	1	36,000
Ceres, South & SW.	38	32	0	6	172,301
Chitwood	8	7	1	0	94,233
Conservation	11	3	1	7	25,446
Cromwell & E.	9	5	0	4	23,201
Cushing	29	17	1	11	78,065
Cushing Dist., East	7	5	0	2	18,812
Davenport & West Dist.	15	10	0	5	52,764
Davenport, So. & SE.	50	47	2	1	174,733
Dilworth	26	18	0	8	78,074
Dora	10	4	0	6	30,118
Duncan, West	11	6	1	4	26,756
Earlsboro & E.	9	6	0	3	33,588

s Dry	Footage
5	76,442
8	57,835
9	91,081
12	20,014
71	161,464
20	78,671
6	29,049
38	358,001
5	90,190
4	16,909
6	12,655
47	194,148
7	28,283
15	59,287
14	66,738
10	15,392
46	231,357
28	177,860
6	32,617
10	153,799
2	35,365
6	19,232
30	155,383
31	140,041
18	245,027
4	10,435
25	76,592
9	40,322
19	120,375
13	56,234
21	131,315
32	134,656
34	279,036
15	46,212
30	155,919
658	3,631,882

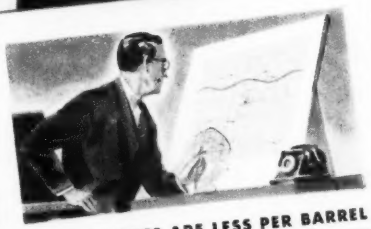
by Fields

Dry	Footage
6	22,047
3	30,822
7	68,327
0	32,727
1	10,777
5	71,411
5	46,800
4	258,078
1	18,376
4	31,750
5	21,589
1	14,250
1	5,253
7	19,148
3	24,405
7	39,298
3	18,835
0	51,669
3	19,238
1	16,830
1	10,349
6	41,061
3	14,165
1	65,459
3	10,409
2	88,134
1	29,427
4	21,355
20	78,161
1	49,422
5	69,197
2	72,861
28	350,741
1	36,080
6	172,301
0	94,233
7	25,446
4	23,201
11	78,085
2	18,812
5	52,764
1	174,793
8	78,074
6	30,118
4	26,756
3	33,588

URNAL

AXELSON FIRST CHOICE

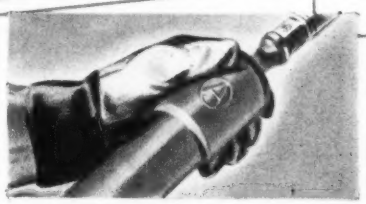
PETROLEUM PRODUCTION EXECUTIVES AGREE AXELSON pumps, the result of 55 years' experience by the world's largest designer and manufacturer of deep-well plunger pumps, deliver the most efficient and dependable production at all depths, under any well condition, with every type of surface prime mover.



LIFTING COSTS ARE LESS PER BARREL when the crew runs an AXELSON pump ... maximum delivery per stroke with minimum power consumption ... fewer costly pulling jobs ... reduced pump repair and maintenance expense.

FEWER INTERRUPTIONS OF PRODUCTION SCHEDULES occur when AXELSON pumps are working the lease ... interchangeable parts designed for individual bottom-hole conditions ... precision manufacture ... rigid metallurgical and quality control ... AXELSON'S own time-proved alloys.

MAXIMUM PRODUCTION FROM ANY WELL is assured with an AXELSON pump ... custom-assembled to meet individual well characteristics such as gravity, gas volume, heat, water, abrasive and corrosive conditions, length of stroke, pumping speed, and power at the rig.



THE CREWS ON THE LEASE *KNOW* AXELSON PUMPS ... how they work and why they work better ... This knowledge, by the men who are responsible for maintaining production, pays extra dividends through keeping the fluid column moving more efficiently.

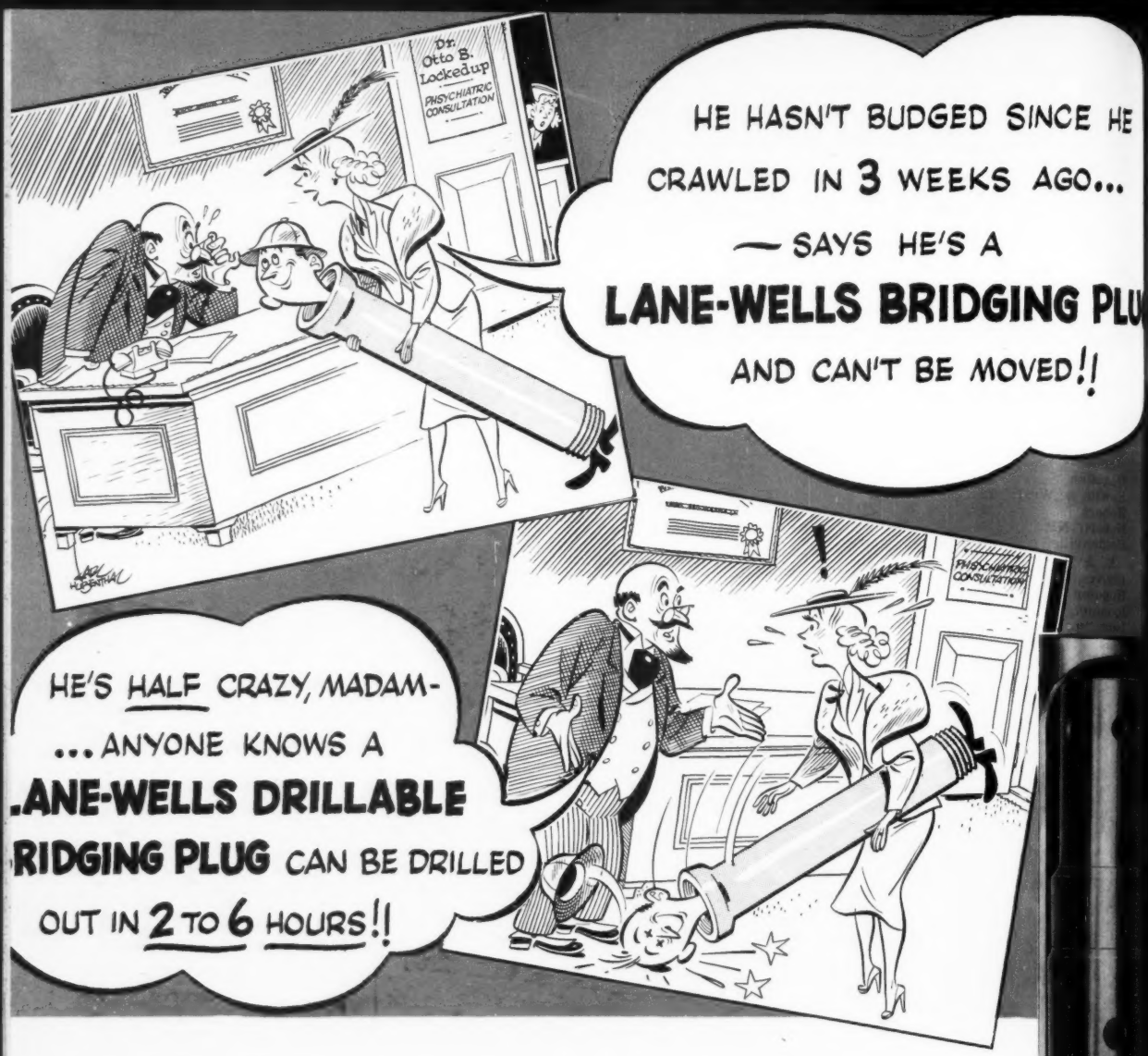
AXELSON FIRST CHOICE *in Sucker Rods—Deep Well Plunger Pumps, Pump Components and Hydraulic Long Stroke Pumping Units*

AXELSON DEEP WELL PLUNGER *Pumps*

PROVED DEPENDABILITY FOR OVER HALF A CENTURY

THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

AXELSON MANUFACTURING CO. • PLANTS—Los Angeles 11; St. Louis 16 • OFFICES—New York City 7; Tulsa 1; Buenos Aires Argentina; Caracas, Venezuela • DISTRIBUTORS—Jones & Laughlin Supply Co.; Great Northern Tool & Supply Co.; C. C. McDermond, Maracaibo, Venezuela; Industrial Agencies, Ltd., San Fernando, Trinidad, B. W. I.; Industrias Waldrip & Campbell, Caracas, Venezuela.


Dr. Otto B. Lockedup
PHSYCHIATRIC CONSULTATION
HE HASN'T BUDGED SINCE HE CRAWLED IN 3 WEEKS AGO...
— SAYS HE'S A
LANE-WELLS BRIDGING PLU
AND CAN'T BE MOVED!!
HE'S HALF CRAZY, MADAM-
...ANYONE KNOWS A
.ANE-WELLS DRILLABLE
RIDGING PLUG CAN BE DRILLED
OUT IN 2 TO 6 HOURS!!

Everyone knows there are only two really important features about bridging plugs. First: That they set and hold where they are placed. Second: That they can be quickly and easily drilled if desired.

Lane-Wells Drillable Bridging Plugs give you both these advantages. Operators in almost every producing field in the world have proved that these superior Bridging Plugs provide a quick, economical bridge for either temporary or permanent location because they give positive, leakproof pack-off.

Yet they can be drilled out or knocked down in a minimum of time. Usually a single rock bit is sufficient to do the job with rotary tools; ordinary tools do the same quick job with a cable tool rig.

When you want a bridge—choose a Lane-Wells Bridging Plug—and be time and money ahead.

Send for your copy of the NEW Lane-Wells Bridging Plug Bulletin!

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OS ANGELES • HOUSTON • OKLAHOMA CITY

General Offices, Export Offices and Plant
5610 S. Soto St., Los Angeles 11, Calif.
24 HOUR SERVICE • 49 BRANCHES

Field—	Comp.	Oil	Gas	Dry	Footage
Earlsboro, No.	5	3	0	2	21,512
Edmond, NE.	9	7	1	1	52,975
Edmond, West	19	19	0	0	128,709
Elmore, NE.	45	39	3	3	360,576
Empire-Comanche	28	11	2	15	82,248
Eola	5	3	0	2	46,589
Essaquanahdale Dist.	19	9	0	10	29,712
Evansville Dist.	12	6	1	5	60,698
Fish & East	14	6	0	8	38,831
Fitts & West	5	1	0	4	12,118
Fourdee	34	34	0	0	165,031
Garden Grove	31	28	0	3	107,660
Gessman	10	4	0	6	31,104
Glenn	34	25	0	9	52,668
Greasy Creek Dist.	14	7	0	7	15,341
Grief Creek	16	13	0	3	46,035
Haney, East	11	8	1	2	39,145
Hawkins, NW.	5	2	1	2	10,372
Haydenville, South	6	2	0	4	18,902
Healdton	59	47	0	12	92,732
Hewitt & West	12	11	0	1	35,016
Hobart	6	2	0	4	9,514
Hobart, NE.	11	5	0	6	21,731
Holdenville, E. & W.	31	17	2	12	68,179
Hoover, NW.	26	17	1	8	58,707
Hugoton	96	0	95	1	265,091
Iconium, NW.	22	22	0	0	116,077
Isom Springs	9	6	0	3	4,795
Jones	75	66	0	9	344,487
Katie	16	12	1	3	103,011
Kaw, South	11	7	0	4	34,359
Kellyville Dist. & So.	7	4	0	3	15,157
Keokuk & NE.	9	4	2	3	28,780
Keystone & E. & NE.	8	3	0	5	18,597
Knox	78	60	0	18	260,098
Konawa & SW.	10	2	1	7	27,341
Lauderdale	5	2	0	3	11,870
Lawton Dist.	36	23	0	13	17,768
Lindsay, East	31	30	0	1	313,240
Lindsay, North	8	8	0	0	87,179
Lindsay, NE.	12	12	0	0	123,793
Little River & E. & SE.	28	15	0	13	97,826
Loco	40	26	1	13	45,751
Madill	6	4	0	2	4,341
Mannford Dist. & E. & SE.	12	8	0	4	25,862
Maramec & SE.	18	15	0	3	54,767
March & No.	18	12	0	6	53,656
Marshall	6	3	0	0	36,657
Maysville, So.	7	4	0	3	48,016
Maysville, SW.	17	15	0	2	128,913
Milfay	10	7	0	3	39,617
Milroy	14	10	0	4	33,968
Morris	9	7	0	2	20,031
Morse Dist.	7	3	0	4	23,303
Newcastle, SE.	10	10	0	0	89,449
New England	9	8	0	1	21,197
New Hope, SE.	18	18	0	0	132,690
Okemah	5	2	0	3	7,840
Okemah, East	6	3	0	3	19,522
Oklahoma City	12	11	0	1	68,555
Okmulgee Dist.	7	4	0	3	9,399
Olive & So.	5	2	0	3	12,396
Ong	6	2	0	4	20,974
Osage City & East	15	10	0	5	20,809
Oscar	12	10	0	2	19,406
Otoe City	10	7	0	3	33,182
Paden & So.	5	2	0	3	16,484
Perry, NW.	13	12	0	1	59,423
Pickett Prairie	10	9	0	1	27,123
Polo & SE.	7	7	0	0	34,296
Prague	7	5	0	2	24,503
Randlett, SW.	52	21	0	31	84,722
Ringwood	5	5	0	0	33,728
Robberson	40	27	4	9	72,509
Seay	18	13	0	5	17,646
Seminole City	5	4	0	1	19,015
Seminole, East	5	5	0	0	18,491
Shawnee, E. & NE.	8	4	0	4	37,925
Sheldon	6	3	0	3	19,218
Sholem Alechem	113	100	0	13	592,420
Slick Dist. & South	8	3	0	5	22,716
Soldier Creek	68	54	0	14	110,103
Spencer & No.	12	10	0	2	25,988
Sporn & E. & NE.	8	2	1	5	32,063
St. Louis Dist. & No.	20	12	0	8	55,961
Stroud & East	38	26	1	11	110,192
Sylvian	13	11	0	2	46,264
Tatums	168	135	3	30	423,582
Tyrola & NW. & So.	7	1	2	4	13,546
Velma	119	95	4	20	554,420
Velma, West	7	3	0	4	39,044
Victory Hill	5	3	0	2	19,986
Walters Dist.	72	43	3	26	154,881
Wayne, SW.	9	9	0	0	63,629
Weleetka & E. & So. & SW.	6	2	1	3	13,711
Wetumka & So. & SE.	9	0	6	3	19,789
Wewoka & E. & No. & NE.	16	2	4	10	52,423
Wewoka Lake	10	7	0	3	33,435
Wheeler	37	27	1	9	28,070
Witcher	52	50	1	1	329,867
Wofford & So.	8	1	3	4	15,962
Woolaroc	5	0	2	3	8,841
Yale-Quay	16	12	0	4	52,013
Yeager	7	4	1	2	22,952
Miscellaneous	465	199	48	218	1,563,577
Total	3,462	2,273	229	960	11,883,513

KANSAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	37	5	0	32	136,693
February	29	3	1	25	106,554
March	27	2	0	25	94,785
April	40	6	0	34	143,644
May	42	8	1	33	147,880
June	55	6	2	47	198,798
July	44	7	0	37	164,159
August	45	3	1	41	158,840
September	41	7	0	34	146,259
October	60	5	2	53	214,721
November	52	9	0	43	174,235
December	38	4	1	33	134,262
Total	510	65	8	437	1,820,830

Introducing our

Flying "Trouble-Wagon"

• We are proud of our new Republic Seabee Seaplane, which is constantly alerted to answer your calls for service on G. M. Diesel-powered boats and rigs. Now, there's no need to suffer serious delays or shutdowns due to missing or broken parts. . . . Give us a call, and we will literally come flying, bringing parts and mechanics to straighten out your trouble. No location is too remote or inaccessible for our flying "trouble-wagon".

• In a further effort to round out our service we have opened two new branches. The one at 630 Destrehan Avenue, on the Harvey Canal, has a canal-side dock where you can tie up. . . . The other, in the aircraft hangar at Grande Isle, is maintained with a particular view to the convenience of operators in that vicinity.

• All of our shops are completely outfitted to service and rebuild G. M. engines. Each is fully staffed with mechanics and completely stocked with parts, and operated on a 24-hour basis.

"Round the Clock Parts and Service"

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BRANCHES AT: Houma - Berwick - Grande Isle

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BREWSTER N-7 TEAM

For 7500' DRILLING

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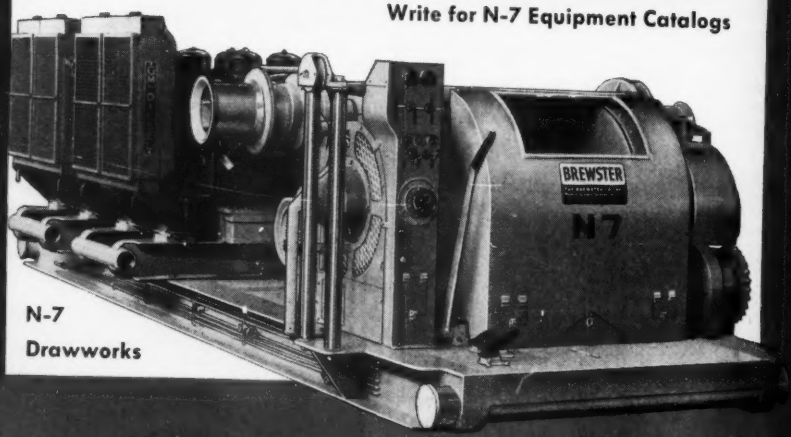

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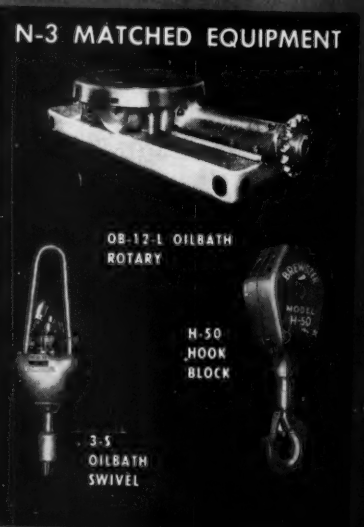

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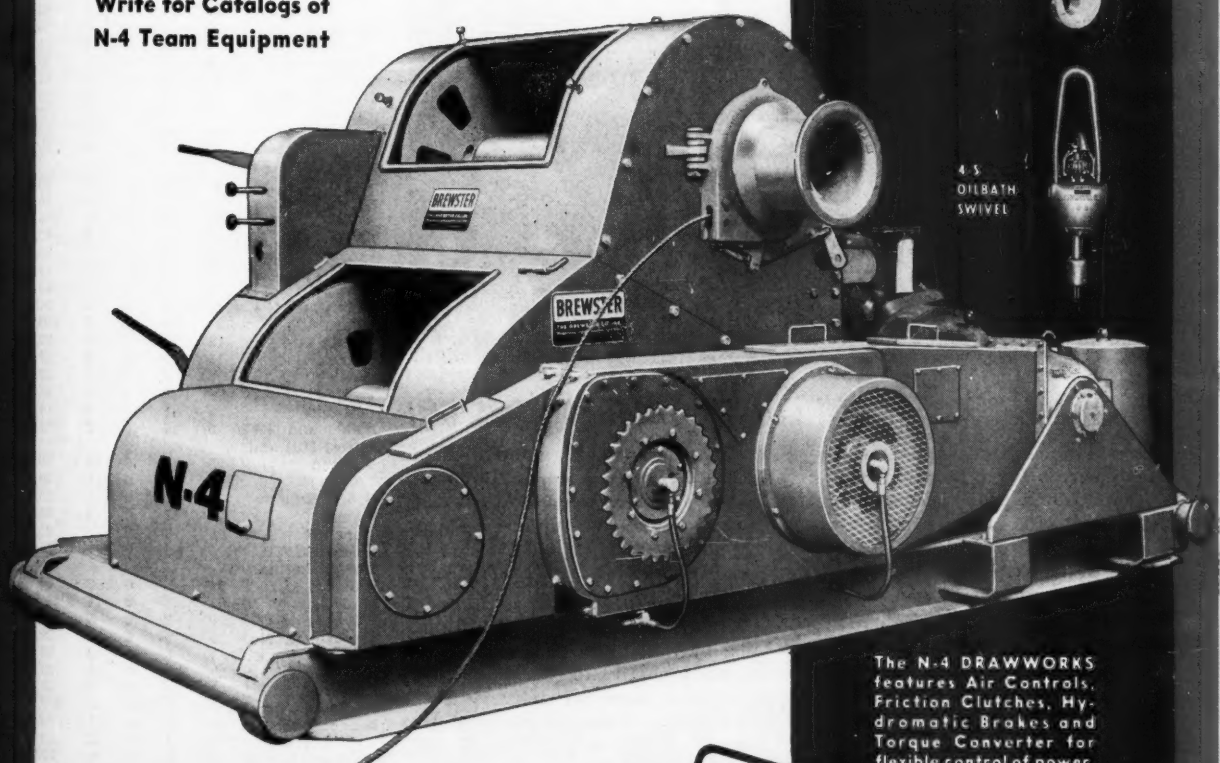

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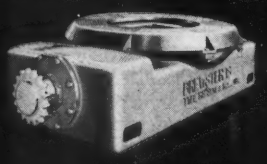

RS-18 OILBATH ROTARY

H-100 HOOK BLOCK

4-S OILBATH SWIVEL

The N-4 DRAWWORKS features Air Controls, Friction Clutches, Hydromatic Brakes and Torque Converter for flexible control of power.

The BREWSTER CO., Inc.

Manufacturers of Drilling Equipment Since 1910

SHREVEPORT, LOUISIANA, U.S.A.

BREWSTER *Drilling Equipment*

KANSAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	235	140	32	63	754,313
February	162	94	22	46	507,610
March	162	108	13	41	504,577
April	167	99	15	53	527,843
May	241	142	40	59	765,393
June	280	158	49	73	869,705
July	250	130	57	63	780,968
August	245	141	30	74	781,994
September	253	131	40	82	809,940
October	251	142	35	74	816,634
November	230	144	24	62	738,214
December	298	183	17	98	955,916
Total	2,774	1,612	374	788	8,813,107

KANSAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	272	145	32	95	891,006
February	191	97	23	71	614,164
March	189	110	13	66	599,362
April	207	105	15	87	671,487
May	283	150	41	92	913,273
June	335	164	51	120	1,068,503
July	294	137	57	100	945,127
August	290	144	31	115	940,834
September	294	138	40	116	956,199
October	311	147	37	127	1,031,355
November	282	153	24	105	912,449
December	336	187	18	131	1,090,178
Total	3,284	1,677	382	*1225	10,633,937

*Includes 32 service wells.

KANSAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Barber	12	1	1	10	61,520
Barton	42	9	0	33	146,283
Butler	33	5	0	28	95,390
Cowley	20	3	0	17	61,085
Decatur	4	0	0	4	16,308
Ellis	38	5	0	33	139,838
Graham	23	0	0	23	91,636
Harvey	7	1	0	6	24,598
Kingman	6	0	0	6	27,356
Lyon	4	0	0	4	9,251
McPherson	22	3	2	17	67,117
Marion	21	1	0	20	56,983
Osborne	4	0	0	4	13,914
Pawnee	14	1	0	13	59,154
Pratt	11	1	0	10	50,756
Reno	12	1	0	11	48,905
Rice	22	5	0	17	73,982
Rooks	53	11	0	42	191,760
Rush	15	1	0	14	57,442
Russell	13	2	0	11	43,723
Sedgwick	17	3	0	14	57,581
Stafford	39	5	0	34	152,854
Sumner	16	1	0	15	67,861
Waubansee	7	0	0	7	13,238
Woodson	8	0	0	8	12,252
Miscellaneous	47	6	5	36	180,043
Total	510	65	8	437	1,820,830

WHEN THE TIME-SWITCH CLOSES, THESE MOTORS GO!

You make the *most* of electrified pumping when your motors are Robbins & Myers. They're protected, *inside and out*—from wind and weather; from overheating; from mechanical and electrical failure. Already they're cutting operation costs on *thousands* of well-pumping jobs.

MAINTENANCE? CHECK THIS. Extra-wide, sealed ball bearings need greasing only every *five years.* Windings are specially treated for remarkable moisture resistance. Outside air circulates at high velocity through rotor and between windings and shell, to keep *whole motor* cool. Lead-ins are sealed. Precision manufacture means perfect alignment—preserves bearing life and air gap.

RIGHT DOWN YOUR ALLEY. Here are high-torque oil-country motors in *whatever* type you want—drip-proof, splash-proof, totally enclosed... with normal or high slip. See your R&M distributor now for delivery from his stock, or write *Robbins & Myers, Inc., Motor Division, Dept. G-19B, Springfield 99, Ohio.*

R&M *Uni-Shell* MOTORS

PUT PUMPING ON A BUSINESS BASIS

KANSAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Ainsworth, So.	13	8	0	5	43,639
Albert	19	16	0	3	81,302
Aldrich	13	9	0	4	44,061
Allen	14	5	0	9	35,589
Allen, No.	7	5	0	2	18,923
Ames	9	4	0	5	30,253
Ash Creek	13	11	0	2	50,396
Ash Creek, So. and SW.	7	6	0	1	26,619
Augusta	40	32	0	8	101,602
Barry	16	9	0	7	56,264
Barry, East	11	6	0	5	38,697
Barry, West	13	10	0	3	44,903
Beaver, No.	13	10	0	3	47,038
Beaver, NW	11	8	1	2	36,101
Bemis-Shutts	33	25	0	8	116,189
Berland	10	7	0	3	38,564
Big Creek	20	16	0	4	63,737
Bloomer	8	3	0	5	26,804
Blue Hill	5	4	0	1	16,968
Boggs	8	7	0	1	39,422
Burnett	24	22	0	2	84,328
Burnett, NW.	7	5	0	2	25,428
Burnett, SW.	47	43	0	4	167,972
Burrton	24	23	0	1	80,861
Carmi	13	11	0	2	56,447
Carroll and SW. and W.	20	13	0	7	68,221
Chandler	11	11	0	0	38,355
Chase	106	80	0	26	345,727
Combs	12	9	0	3	40,161
Covert-Sellers	10	9	0	1	24,020
De Greer	14	11	0	3	74,408
Dorr	6	5	0	1	20,257
Drach and NW.	10	7	0	3	37,035
El Dorado	121	108	0	13	296,684
Elbing and No.	12	8	0	4	28,586
Eureka	11	7	0	4	22,165
Eveleigh	8	7	0	1	26,768
Fairport	14	12	0	2	46,401
Fairview	5	1	0	4	14,965
Fisher and NW.	6	4	0	2	21,899
Forest Hill and North	23	13	0	10	76,524
Fox-Bush	14	8	0	6	39,566
Frog Hollow	5	4	0	1	15,308
Gates	18	13	0	5	65,051
Geneseo	8	6	0	2	25,818
Gorham	8	3	0	5	25,620
Haferman and East	11	9	0	2	35,721
Hall-Gurney	71	57	0	14	219,902
Heyen and W.	9	7	0	2	33,066
Hilger and No.	5	3	0	2	20,542
Hiss	7	5	0	2	23,890
Hoisington	29	25	0	4	99,262
Hufford	6	4	0	2	22,675
Hugoton	355	0	352	3	968,130
Jelinek	8	7	0	1	28,620
Kenilworth	5	3	0	2	19,135
Klug and North	6	2	0	4	20,709
Kowalsky	7	4	0	3	23,884
Kowalsky, NW.	11	6	0	5	37,291
Kraft-Prusa	70	46	0	24	231,213
Kramer-Stern	6	5	0	1	18,413
Kraus	6	2	0	4	22,769
Laton	13	11	0	2	43,649
Lost Springs and N and S	37	23	0	14	85,275
Madden	12	6	0	6	21,452

Field—	Comp.	Oil	Gas	Dry	Footage
Max	5	4	0	1	18,038
Morel	35	20	0	15	132,327
Mueller	10	5	0	5	36,368
Ney	5	3	0	2	16,850
Northampton	17	14	0	3	164,262
Nunn	8	6	0	2	37,810
Orth and E. and W.	39	27	0	12	117,856
Padgett	10	6	0	4	36,452
Palco and NE.	15	11	0	4	54,833
Paradise Creek	8	4	0	4	28,835
Pawnee Rock and So.	17	14	0	3	65,608
Pierce	11	8	0	3	28,946
Pritchard	5	3	0	2	17,732
Quincy	6	5	0	1	9,232
Rahn	5	5	0	0	14,582
Ray	13	10	0	3	47,058
Raymond	7	6	0	1	22,007
Richardson	6	1	0	5	22,517
Rick and SE	6	3	0	3	20,145
Ritz-Canton	17	8	1	8	52,692
Robbins	5	3	0	2	15,530
Rock	9	5	0	4	25,648
Rolling Green	5	2	0	3	17,153
Ryan	15	12	1	2	56,334
Salter	12	10	0	2	36,035
Schulte	6	1	1	4	21,836
Seeley-Wick	9	8	0	1	17,913
Semisch	8	5	0	3	22,677
Shinn	5	3	0	2	13,993
Silica and So.	86	58	0	28	286,243
Skinner	20	16	3	1	89,562
Smock-Sluss	5	2	0	3	13,733
Smyres and N.	5	3	0	2	16,859
Stoltenberg	27	22	0	5	89,866
Thrall-Agard	7	6	0	1	15,589
Tisdale	14	6	0	8	35,265
Toronto	5	2	1	2	7,219
Towanda	8	5	0	3	20,464
Trapp	103	69	0	34	342,156
Twin Mounds	6	3	0	3	17,097
Unruh	8	5	2	1	29,508
Virgil and N.	22	15	0	7	37,928
Walters	8	7	0	1	29,309
Webster	10	7	0	3	29,309
Welch and W.	25	19	0	6	89,514
Wellington	12	9	0	3	47,479
Wenger	15	9	0	6	42,044
Westhusin	7	3	0	4	24,155
Wherry and N.	9	4	0	5	30,465
Winterscheid	21	19	0	2	37,222
Zenith-Peace Creek	8	4	0	4	29,416
Zurich	6	3	0	3	21,780
Miscellaneous	504	235	12	257	1,550,137
Total	2,774	1,612	374	788	8,813,107

MISSOURI—NEBRASKA—IOWA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	423
April	1	0	0	1	420
May	3	0	0	3	1,155
June	6	0	0	6	5,282
July	5	0	0	5	5,764
August	5	0	0	5	6,101
September	6	0	0	6	6,283
October	1	0	0	1	1,828
November	1	0	0	1	945
December	1	0	0	1	410
Total	30	0	0	30	28,611

MISSOURI—NEBRASKA—IOWA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	6	3	0	3	817
February	6	5	0	1	3,014
March	1	1	0	0	568
April	6	1	1	4	1,709
May	3	1	0	2	3,078
July	2	2	0	0	853
August	3	3	0	0	1,438
October	3	2	1	0	3,166
November	2	0	1	1	733
Total	32	18	3	11	15,376

MISSOURI—NEBRASKA—IOWA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	7	3	0	4	1,240
February	6	5	0	1	3,014
March	1	1	0	0	568
April	7	1	1	5	2,129
May	6	1	0	5	4,233
June	6	0	0	6	5,282
July	7	2	0	5	6,617
August	8	3	0	5	7,539
September	6	0	0	6	6,283
October	4	2	1	1	4,994
November	3	0	1	2	1,678
December	1	0	0	1	410
Total	62	18	3	*41	43,987

*Includes 6 service wells.

MICHIGAN

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	31	1	3	27	67,292
February	19	1	0	18	41,187
March	20	1	0	19	46,694
April	16	3	1	12	43,480
May	20	2	1	17	44,876
June	29	1	0	28	64,691
July	19	2	1	16	38,061
August	36	3	0	33	82,263
September	28	1	1	26	61,488
October	31	0	0	31	70,167
November	34	5	0	29	71,540
December	30	3	0	27	66,832
Total	313	23	7	283	698,571

MICHIGAN

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	41	26	4	11	99,839
February	25	14	2	9	60,362
March	23	15	1	7	60,845
April	25	17	0	8	59,090
May	28	12	0	16	62,039
June	64	27	1	36	122,616
July	59	27	5	27	119,207
August	69	39	1	29	155,405
September	60	34	2	24	129,536
October	74	44	4	26	155,098

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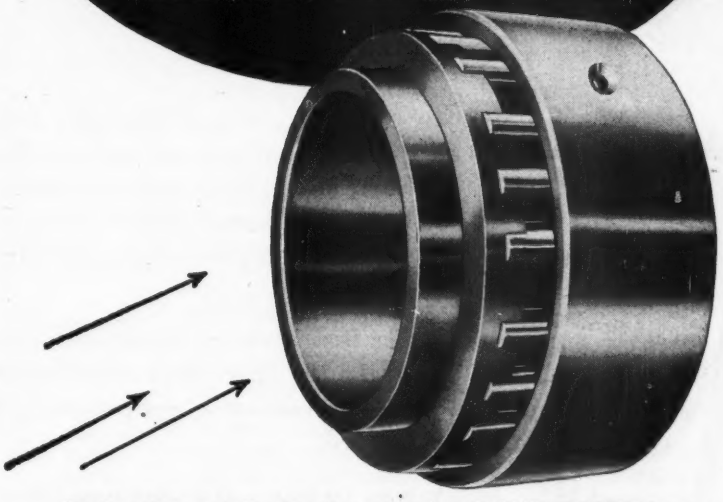
Heavy-Duty

Roller Bearings



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AMERICAN ROLLER BEARING CO.

420 Melwood Street Pittsburgh, Pa.

Pacific Coast Office: 1718 S. Flower St., Los Angeles, Calif.

Month—	Comp.	Oil	Gas	Dry	Footage
November	61	37	2	22	141,919
December	53	40	1	12	118,447
Total	582	332	23	227	1,284,403

MICHIGAN

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	72	27	7	38	167,131
February	44	15	2	27	101,549
March	43	16	1	26	107,539
April	41	20	1	20	102,570
May	48	14	1	33	106,915
June	93	28	1	64	187,307
July	78	29	6	43	157,268
August	105	42	1	62	237,668
September	88	35	3	50	191,024
October	105	44	4	57	225,265
November	95	42	2	51	213,459
December	83	43	1	39	185,279
Total	895	355	30	*510	1,982,974

*Includes 75 service wells.

MICHIGAN

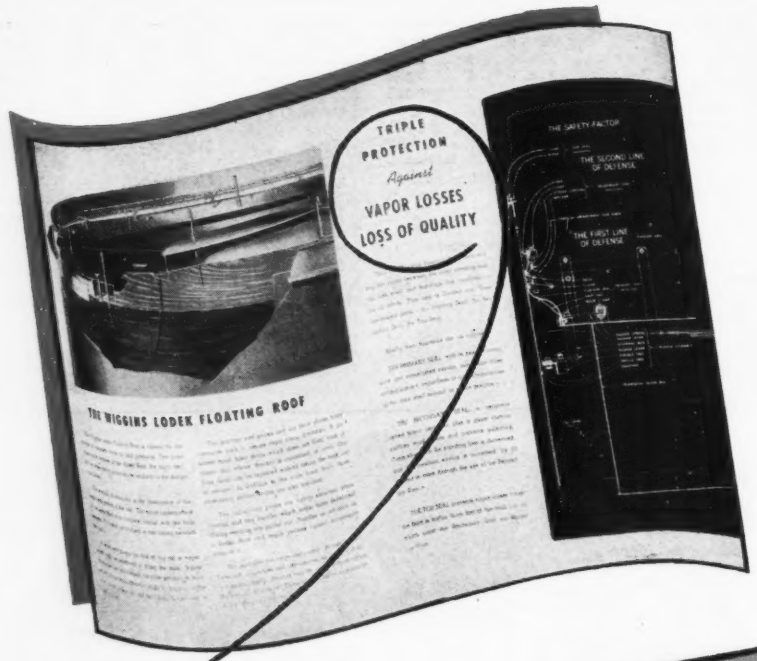
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Allegan	65	3	0	62	95,400
Arenac	15	4	0	11	46,203
Bay	14	1	0	13	42,558
Clinton	6	1	0	5	17,253
Gladwin	4	0	0	4	16,157
Gratiot	5	0	1	4	11,765
Ionia	4	0	0	4	11,822
Isabella	7	1	0	6	21,901
Kalamazoo	5	0	0	5	9,305
Kent	18	1	0	17	36,574
Lake	4	0	0	4	13,387
Mason	10	3	0	7	24,935
Mecosta	11	0	0	11	21,828
Montcalm	21	1	0	20	60,382
Muskegon	9	1	1	7	18,912
Newaygo	15	0	0	15	33,107
Oceana	10	1	0	9	23,265
Osceola	8	2	0	6	31,439
Ottawa	8	0	0	8	12,638
St. Clair	9	1	1	7	8,993
Van Buren	26	1	0	25	28,688
Washtenaw	4	0	3	1	6,858
Miscellaneous	35	2	1	32	105,201
Total	313	23	7	283	698,571

MICHIGAN

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Arbela	19	10	0	9	49,747
Austin	13	0	0	13	18,346
Beaver Creek	39	35	1	3	170,051
Bentley	5	1	0	4	17,823
Bloomer	11	8	0	3	29,411
Bloomingdale	6	4	0	2	7,854
Cato	4	2	0	2	14,171
Cranberry Lake	41	0	1	40	54,219
Deep River	8	4	0	4	22,619
Dorr	7	2	0	5	10,585
Eden	8	4	0	4	16,718
Garfield-Orient	5	0	4	1	7,620
Geneva	47	36	0	11	48,138
Goodwell	7	0	0	7	8,060
Headquarters	5	1	0	4	8,634
Heath (Revived)	16	13	0	3	24,425
Hopkins, South	25	18	0	7	39,359
Howell	5	0	4	1	19,699
Jerome	9	6	0	3	34,136
Kawkawlin	34	34	0	0	98,007
Kimball Lake	18	16	0	2	47,628
Marion	28	0	0	28	37,676
Monterey, E. and W.	7	4	0	3	11,579
Mt. Forest	11	6	0	5	33,702
Mt. Pleasant	5	1	0	4	17,828
New Haven, So.	5	0	4	1	4,965
Niles	6	0	0	6	4,029
Pentwater	45	43	0	2	91,853
Pinconning	10	1	0	9	30,643
Roscommon	4	0	3	1	5,427
Rosebush	5	4	0	1	18,685
Salem	6	3	0	3	9,893
Salem, East	17	14	0	3	27,640
Sterling	15	15	0	0	38,945
Stony Lake	6	6	0	0	10,237
Sylvan	4	2	0	2	15,782
Walker	4	4	0	0	7,328
West Branch	6	6	0	0	15,960



The Wiggins Lodek Floating Roof

... designed specially for the storage of corrosive oil products. The entire under surface being in complete contact with the tank contents, no vapors are trapped or can collect beneath the roof.

The basic exclusive conservation features of the Hidek Roof including the triple seal and extra large pontoons are retained.

Write for bulletin FR-3 which gives further details on Wiggins Lodek Floating Roofs.

WIGGINS CONSERVATION STRUCTURES

Hidek Floating Roof
Dry Seal Lifter Roof
Improved Breather Roof
Lodek Floating Roof
Dry Seal Gasholder
Improved Balloon Roof

GENERAL AMERICAN TRANSPORTATION CORPORATION

WIGGINS VAPOR SEALS GENERAL AMERICAN TRADE MARK

135 SOUTH LA SALLE STREET, CHICAGO 90, ILLINOIS

BRANCH OFFICES: New York • Washington, D. C. • Cleveland
Buffalo • Pittsburgh • New Orleans • Tulsa • Dallas
Houston • Seattle • Los Angeles • St. Louis • San Francisco

Sub-licensees

WESTERN STATES: Western Pipe & Steel Co. of California, Los Angeles
Consolidated Steel Corp., San Francisco
SOUTHERN STATES: Wyatt Metal and Boiler Works, Houston – Dallas, Texas
GREAT BRITAIN: Motherwell Bridge & Engineering Co., Ltd., Scotland
FRANCE: Etablissements Delattre & Frouard réunis, Paris
CANADA: Toronto Iron Works Ltd., Toronto

Field—	Comp	Oil	Gas	Dry	Footage
Miscellaneous	66	29	6	31	154,981
Total	582	332	23	227	1,284,403

ILLINOIS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	34	5	0	29	89,730
February	45	6	0	39	116,877
March	23	4	0	19	53,328
April	36	6	1	29	84,089
May	53	10	0	43	139,804
June	53	7	0	46	142,508
July	83	20	0	63	217,418
August	70	8	1	61	165,553
September	50	4	0	46	132,744
October	82	14	0	68	205,929
November	53	4	1	48	135,313
December	40	3	0	37	99,107
Total	622	91	3	528	1,582,400

ILLINOIS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	111	81	0	30	294,441
February	131	93	0	38	353,848
March	82	58	0	24	207,343
April	93	54	1	38	236,695
May	185	117	1	67	502,346
June	183	126	1	56	495,056
July	196	123	1	72	525,001
August	147	94	1	52	391,159
September	166	98	2	66	426,843
October	220	135	0	85	577,858
November	160	107	0	53	416,355
December	142	85	1	56	377,108
Total	1,816	1,171	8	637	4,804,053

ILLINOIS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	145	86	0	59	384,171
February	176	99	0	77	470,725
March	105	62	0	43	260,671
April	129	60	2	67	320,784
May	238	127	1	110	642,150
June	236	133	1	102	637,564
July	279	143	1	135	742,419
August	217	102	2	113	556,712
September	216	102	2	112	559,587
October	302	149	0	153	783,787
November	213	111	1	101	551,668
December	182	88	1	93	476,215
Total	2,438	1,262	11	1,165	6,386,453

ILLINOIS

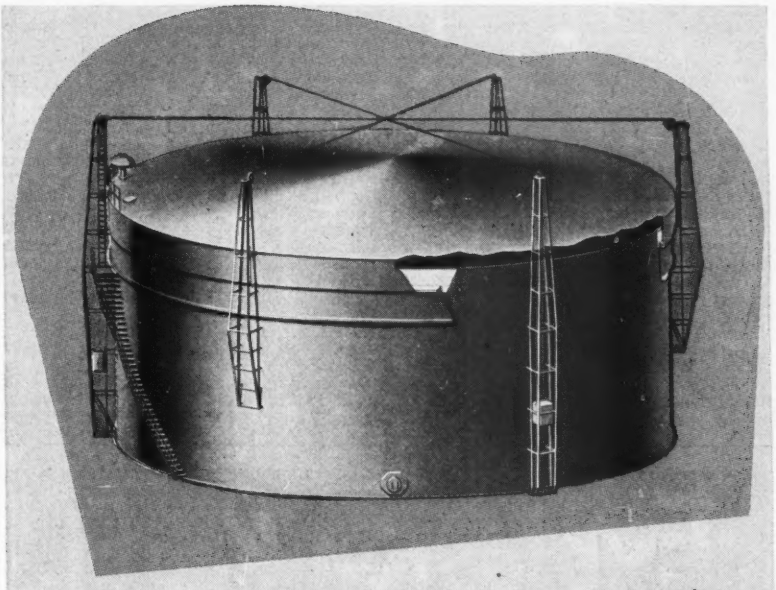
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Bond	11	0	0	11	20,317
Christian	4	2	0	2	10,604
Clark	12	1	0	11	9,953
Clay	76	14	0	62	223,624
Clinton	10	1	0	9	16,881
Coles	11	0	2	9	14,564
Cumberland	4	0	0	4	8,240
Edgar	5	1	0	4	2,722
Edwards	23	5	0	18	72,052
Effingham	18	2	0	16	47,587
Fayette	5	0	0	5	9,665
Franklin	24	7	0	17	72,968
Gallatin	29	7	0	22	75,915
Hamilton	22	4	0	18	71,314
Jasper	32	1	0	31	81,645
Jefferson	29	6	0	23	81,884
Lawrence	13	1	0	12	27,072
Madison	22	1	0	21	20,364
Marion	23	0	0	23	45,357
Montgomery	10	0	0	10	15,505
Perry	8	0	0	8	15,325
Richland	44	8	0	36	136,529
Saline	6	0	0	6	15,830
Shelby	5	0	0	5	10,568
Wabash	42	13	0	29	107,624
Washington	18	1	0	17	32,591
Wayne	51	9	0	42	167,833
White	40	7	0	33	126,977
Miscellaneous	25	0	1	24	40,891
Total	622	91	3	528	1,582,400

ILLINOIS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Albion Cons.	10	5	0	5	22,563
Albion, East	6	4	0	2	18,696
Allendale	44	21	0	23	76,847



THE WIGGINS DRY SEAL LIFTER ROOF

. . . can be used to conserve the vapors of a single tank, on which it is installed, or it can serve as a vapor balancing unit of several interconnected tanks.

ADVANTAGES

THE SEAL	1 — 100% dry seal eliminates corrosion, heating and freezing problems. 2 — No maintenance other than periodic inspection required. 3 — No possibility of stored product being absorbed in seal and creating a fire hazard. 4 — Out-of-level tank grade does not effect seal operation.
COUNTER BALANCE SYSTEM	1 — Reduces operating pressure to 1¼" water. 2 — Reinforcement of interconnected tanks not required. 3 — All mechanism completely accessible from outside. 4 — Not affected by out-of-level tank grade. 5 — No lubrication required.
PRESSURE VACUUM RELIEF	1 — No leakage, absolutely gastight. 2 — All working parts outside tank and readily accessible for inspection. 3 — Simplicity. Single valve serves for both pressure and vacuum relief.

For further details, write for a copy of Bulletin VB-10.

GENERAL AMERICAN TRANSPORTATION CORPORATION

135 SOUTH LA SALLE STREET, CHICAGO 90, ILLINOIS

WIGGINS VAPOR SEALS GENERAL AMERICAN TRADE MARK

BRANCH OFFICES: New York • Washington, D. C. • Cleveland
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WESTERN STATES: Western Pipe & Steel Co. of California, Los Angeles
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GREAT BRITAIN: Motherwell Bridge & Engineering Co., Ltd., Scotland
FRANCE: Etablissements Delattre & Frouard reunis, Paris
CANADA: Toronto Iron Works Ltd., Toronto

Field—	Comp.	Oil	Gas	Dry	Footage
Amity	4	1	0	3	11,862
Barnhill	9	4	0	5	31,270
Bell Prairie	6	4	0	2	20,822
Berryville	6	3	0	3	17,664
Bible Grove Cons.	43	26	0	17	120,972
Boyleston	4	3	0	1	12,897
Browns	6	5	0	1	18,071
Browns, East	15	10	0	5	40,430
Bungay Cons.	11	8	0	3	36,837
Calhoun Cons.	4	0	0	4	12,320
Centralia	12	12	0	0	42,893
Cisne, North	5	3	0	2	16,028
Clay City, North	21	13	0	8	64,059
Clay City-Noble Cons.	311	216	0	95	944,141
Crossville	6	3	0	3	19,012
Dale-Hoodville Cons.	17	14	0	3	52,066
Divide, East	22	15	0	7	61,711
Divide, South	10	3	0	7	28,292
Dubois	5	0	3	2	6,569
Dundas, East	24	16	0	8	71,401
Dupo	7	7	0	0	5,269
Fairfield	16	7	0	9	52,709
Goldengate Cons.	8	4	0	4	26,625
Grayville, West	29	21	0	8	78,314
Herald	12	6	0	6	33,109
Herald, East	21	9	0	12	55,953
Herald, North	4	3	0	1	11,789
Innman, East	98	89	0	9	228,691
Innman, North	8	5	0	3	20,168
Innman, West	5	3	0	2	11,462
Iola Cons.	11	7	0	4	26,885
Johnson, North	4	1	0	3	3,656
Johnsonville Cons.	9	6	0	3	28,840
Johnsonville, West	4	2	0	2	12,317
Kenner, West	11	9	0	2	32,657
Lawrence	14	8	0	6	23,478
Livingston	13	4	0	9	7,660
Louden	7	6	0	1	10,985
Main	11	4	0	7	14,394
Marine	6	4	0	2	10,771
Markham City, West	4	2	0	2	12,172
Mattoon	34	26	0	8	67,540
Maud, Central	9	8	0	1	23,222
Maud	43	28	0	15	103,342
Maud, North	31	19	0	12	83,849
Maud, West	14	9	0	5	35,294
Maunie, North	18	12	0	6	50,954
McKinley	10	8	0	2	23,780
Mill Shoals	16	9	0	7	55,440
Mt Carmel	9	4	0	5	16,641
Mt. Carmel, West	23	13	0	10	52,648
New Harmony-Keensburg Cons.	39	28	0	11	108,166
New Haven, W.	8	6	0	2	18,511
Odin	5	4	0	1	9,038
Olney	5	1	0	4	15,466
Omaha	6	3	0	3	9,088
Parkersburg Cons.	19	17	0	2	60,467
Passport	49	39	0	10	148,740
Phillipstown Cons.	21	9	0	12	62,217
Raymond	4	2	0	2	2,442
Rochester	37	29	0	8	66,740
Roland	41	29	1	11	96,481
Rural Hill	45	33	0	12	210,725
Sailor Springs Cons.	56	44	0	12	160,729
Sailor Springs, West	14	13	0	1	37,284
Seminary	8	6	0	2	25,684
Sesser	4	3	0	1	11,188
Shattuc	9	4	0	5	12,591
Siggins	12	7	0	5	8,117
Stokes-Brownsville	6	2	0	4	15,044
Storms	5	3	1	1	12,158
Stringtown	26	15	0	11	79,183
Thachery	4	2	0	2	13,802
Thompsonville, North	64	47	0	17	200,910
Tonti	8	8	0	0	16,848
Trumbull	4	1	0	3	12,902
Westfield	12	6	0	6	12,040
Westfield, East	5	1	0	4	2,537
West Frankfort	20	17	0	3	56,978
Willow Hill, East	23	11	0	12	60,082
Woodlawn	16	11	0	5	32,808
Miscellaneous	131	38	3	90	256,980
Total	1,816	1,171	8	637	4,804,053

INDIANA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	13	2	0	11	21,929
February	14	3	0	11	19,117
March	20	3	3	14	37,777
April	18	0	1	17	40,611
May	31	1	0	30	65,477
June	36	10	0	26	71,830
July	38	10	1	27	69,711
August	25	5	0	20	56,583
September	33	4	0	29	76,637
October	36	6	0	30	76,333
November	40	4	0	36	77,073
December	23	0	0	23	44,689
Total	327	48	5	274	657,767

INDIANA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	60	34	3	23	108,289
February	62	42	3	17	111,559
March	51	33	6	12	85,327
April	42	33	2	7	70,581
May	72	44	9	19	125,230
June	49	30	0	19	95,840
July	67	37	5	25	126,229
August	68	42	0	26	126,054
September	77	57	1	19	137,197
October	67	36	0	31	115,915
November	79	40	3	36	150,167
December	61	42	3	16	112,994
Total	755	470	35	250	1,365,382

INDIANA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	73	36	3	34	130,218
February	76	45	3	28	130,676
March	71	36	9	26	123,104

Explosion Proof

JUNCTION BOXES

for class 1, group D hazardous locations

Nelson Class 480 Explosion-Proof Cast Iron Boxes are designed for use as junction boxes and equipment enclosures in Class 1, Group D Hazardous Locations. Note these desirable features:

The castings for these boxes are made from a fine grade of gray iron and are produced in our own Foundry.

Flange joints are ground carefully to insure minimum clearances between the flange faces. Mounting lugs are machined. Cover bolts are rust-resisting plated.

Boxes are available in a wide selection of sizes, and are furnished in two types: with inside flanges, and with outside flanges.

If desired, we can also furnish our Class 481 Explosion-Proof Junction Boxes which contain low voltage busses and connectors (600 volts and less).

WRITE FOR NEW DESCRIPTIVE BULLETIN 480

NELSON *Electric* MANUFACTURING CO.

217 North Detroit — TULSA, OKLAHOMA — Telephone 2-5131

Manufacturers of: Explosion-Proof Motor Controls, Junction Boxes and Enclosures, Circuit Breakers and Lighting Panels. Oil Field Motor Controls, Automatic Pipe Line Sampling Devices, Cathodic Protection Equipment, Switchboards, Instrument and Control Panels, Unit Substations.

Month—	Comp.	Oil	Gas	Dry	Footage
April	60	33	3	24	111,192
May	103	45	9	49	190,707
June	85	40	0	45	167,670
July	105	47	6	52	195,940
August	93	47	0	46	182,637
September	110	61	1	48	213,834
October	103	42	0	61	192,248
November	119	44	3	72	227,240
December	84	42	3	39	157,683
Total	1,082	518	40	*524	2,023,149

*Includes 5 service wells.

INDIANA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Gibson	64	10	0	54	148,293
Huntington	5	1	0	4	5,138
Knox	10	1	0	9	21,852
Miami	23	9	0	14	22,174
Pike	8	1	0	7	11,151
Posey	58	11	0	47	155,583
Spencer	16	2	0	14	22,769
Sullivan	21	1	0	20	38,725
Vanderburgh	51	8	0	43	123,833
Vigo	16	2	0	14	30,548
Warwick	8	0	0	8	15,157
Miscellaneous	47	2	5	40	62,544
Total	327	48	5	274	657,767

INDIANA

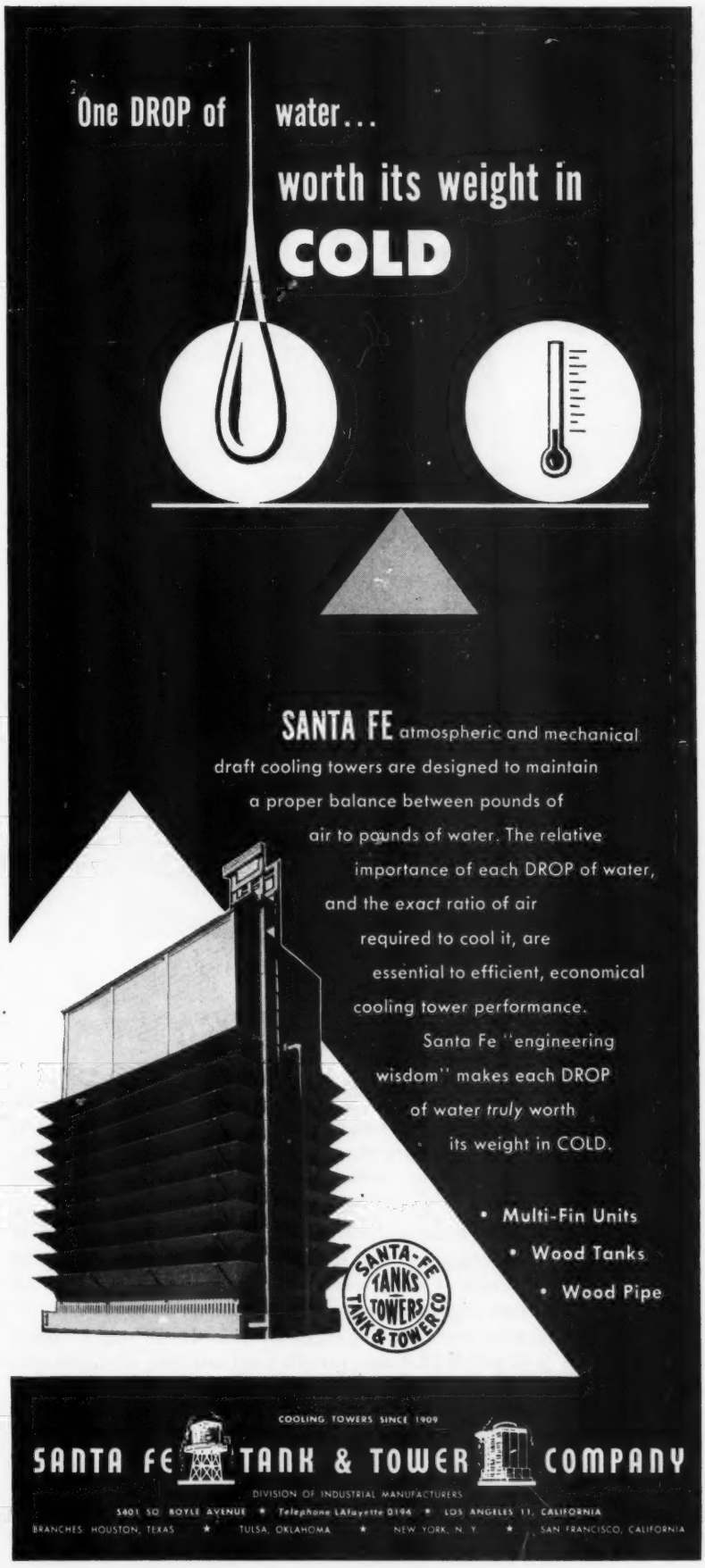
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Belknap	26	14	0	12	49,403
Bufkin	9	6	0	3	22,990
Caborn	6	3	0	3	13,689
Cato	8	0	2	6	8,280
College	6	6	0	0	11,634
Columbia	9	8	0	1	11,219
Evansville	14	9	0	5	18,625
Farmersville	10	7	0	3	15,154
Ford, North	13	8	0	5	31,598
Francisco, So.	7	4	0	3	13,277
Francisco, West	7	3	0	4	13,364
French	6	1	0	5	10,237
Griffin	27	17	0	10	73,628
Horton	16	11	0	5	16,894
Hovey, West	14	8	0	6	29,177
Jefferies	4	1	0	3	8,137
Martin	50	39	0	11	114,645
McGary	12	5	0	7	24,239
Mt. Carmel	59	49	0	10	120,923
Mounts	16	11	0	5	29,804
New Harmony, South	15	13	0	2	31,285
Patoka, East	4	0	0	4	7,481
Peru	50	38	0	12	44,909
Peru, East	4	2	0	2	3,790
Prairie Creek	13	8	0	5	24,628
Princeton, West	5	3	0	2	5,869
Rich Valley	4	3	0	1	3,502
Rochester	24	17	0	7	48,114
Rockport	5	3	0	2	5,450
Siosi	6	6	0	0	13,372
Springfield Cons.	40	33	0	7	80,605
Spring Hill	8	5	0	3	15,081
Stacer	6	2	0	4	13,717
Stooker	4	3	0	1	10,737
Trenton	40	12	22	6	39,379
Troy	5	3	0	2	4,788
Union-Bowman Cons.	66	43	4	19	90,683
Vernon Heights	34	27	0	7	83,870
Vienna, North	8	2	0	6	21,808
Wheeling	6	4	0	2	9,701
Wilfred	15	10	1	4	31,160
Miscellaneous	74	23	6	45	138,534
Total	755	470	35	250	1,365,382

OHIO

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	6	1	1	4	21,261
February	3	0	0	3	14,538
March	3	0	2	1	12,837
April	7	0	3	4	21,571
May	4	1	1	2	13,052
June	3	0	0	3	9,703
July	4	0	1	3	16,076
August	4	0	0	4	14,921
September	2	0	1	1	8,918
October	9	0	0	9	41,971
November	4	0	1	3	15,052
December	3	1	1	1	10,034
Total	52	3	11	38	199,934


One DROP of water...
worth its weight in
COLD
SANTA FE atmospheric and mechanical draft cooling towers are designed to maintain a proper balance between pounds of air to pounds of water. The relative importance of each DROP of water, and the exact ratio of air required to cool it, are essential to efficient, economical cooling tower performance.
Santa Fe "engineering wisdom" makes each DROP of water truly worth its weight in COLD.
• Multi-Fin Units
• Wood Tanks
• Wood Pipe
SANTA-FE TANKS TOWERS TANK & TOWER CO
COOLING TOWERS SINCE 1909
SANTA FE TANK & TOWER COMPANY
DIVISION OF INDUSTRIAL MANUFACTURERS
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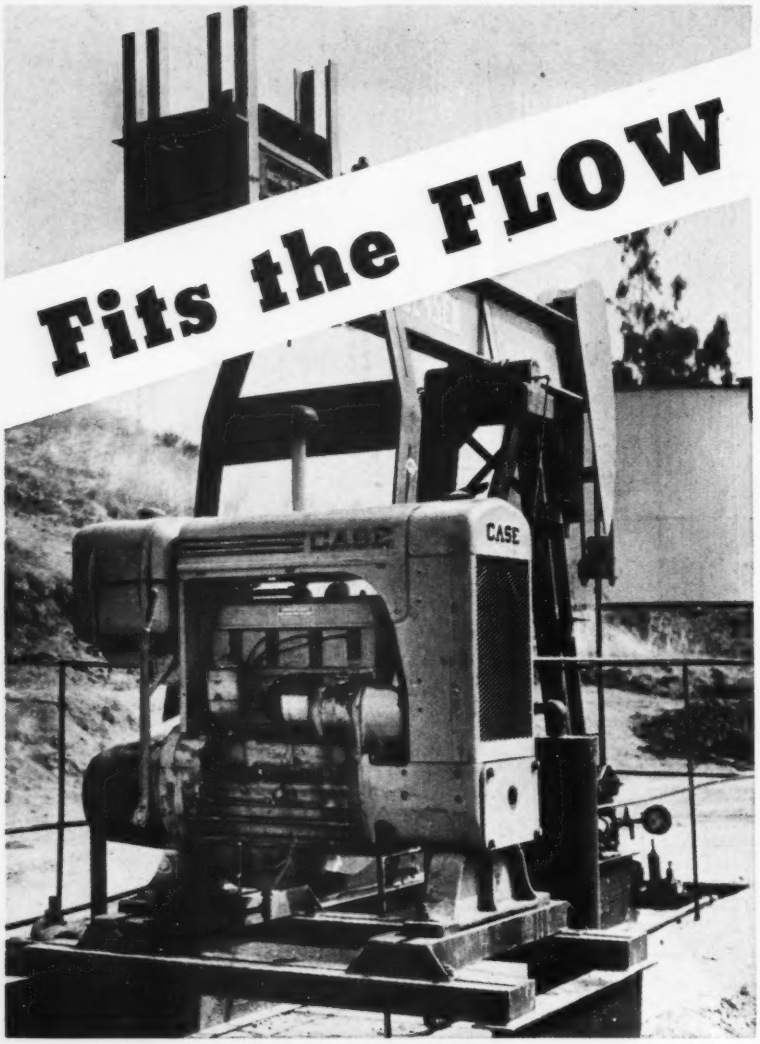
BRANCHES: HOUSTON, TEXAS ★ TULSA, OKLAHOMA ★ NEW YORK, N. Y. ★ SAN FRANCISCO, CALIFORNIA



A Case History from Baldwin Hills

● This is one of two Case "SE" Oilfield Engines at the San Touis lease of the M.G.N. Oil Co., both working with Jensen No. 10 DC pumping units. Wells are of equal depth, with same sizes of tubing, rods, and pumps. One outfit works at 165 bbl. per day, the other at 105 bbl. per day.

The flat torque-curve characteristic of Case engines enables them to pull as strong at reduced speed as at rated speed. This permits wide adjustment of pump speed, to fit the flow, without change of ratio between engine and pump. Fuel consumption comes down in proportion to speed, and long engine life is made still longer. Choice of 28½, 42 and 61 H.P. sizes permits good matching of engine with load. Let your Case oil field dealer give you complete information. J. I. Case Co., Racine, Wis.

CASE ★ ★ ★

OHIO
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	90	26	31	33	264,546
February	75	21	24	30	213,171
March	110	33	38	39	300,525
April	93	29	27	37	230,858
May	139	45	39	55	324,573
June	112	31	32	49	266,056
July	99	31	33	35	230,269
August	145	48	45	52	342,121
September	110	31	26	53	269,973
October	150	49	39	62	360,361
November	102	30	28	44	208,850
December	116	39	34	43	287,047
Total	1,341	413	396	532	3,298,350

OHIO
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	96	27	32	37	285,807
February	78	21	24	33	227,709
March	113	33	40	40	313,362
April	100	29	30	41	252,429
May	143	46	40	57	337,625
June	115	31	32	52	275,759
July	103	31	34	38	246,345
August	149	48	45	56	357,042
September	112	31	27	54	278,891
October	159	49	39	71	402,332
November	106	30	29	47	223,902
December	119	40	35	44	297,081
Total	1,393	416	407	*570	3,498,284

*Includes 89 service wells.

OHIO
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Ashland	3	0	0	3	7,476
Athens	3	0	1	2	11,770
Belmont	1	0	0	1	1,954
Carroll	1	0	0	1	5,352
Columbiana	1	0	0	1	4,518
Coshocton	1	0	0	1	3,423
Cuyahoga	1	0	1	0	3,120
Holmes	1	0	0	1	3,450
Lake	1	0	0	1	3,612
Lawrence	2	0	0	2	5,773
Lorain	4	0	2	2	9,621
Medina	1	0	1	0	2,714
Meigs	3	0	1	2	7,318
Morgan	4	2	0	2	19,724
Muskingum	5	0	1	4	22,828
Perry	3	1	0	2	12,897
Portage	1	0	0	1	4,341
Stark	8	0	3	5	38,469
Summit	1	0	1	0	3,943
Tuscarawas	5	0	0	5	20,095
Wayne	2	0	0	2	7,536
Total	52	3	11	38	199,934

OHIO
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Ashland	227	49	90	88	572,804
Brush Creek	125	54	34	37	524,615
Cambridge	212	56	65	91	296,627
Eastern	42	7	11	24	62,954
Lancaster	265	78	105	82	715,078
Lima	3	2	1	0	4,346
Malta	5	0	2	3	22,962
Mt. Vernon	165	53	59	53	428,705
Sandyville	110	6	79	25	483,683
Stewart	187	108	27	52	186,356
Total	1,341	413	473	455	3,298,350

WESTERN KENTUCKY
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	14	3	0	11	21,536
February	3	1	0	2	4,942
March	11	2	0	9	19,461
April	7	0	0	7	11,428
May	6	2	0	4	10,677
June	9	2	0	7	16,260
July	10	2	0	8	21,458
August	10	2	0	8	22,389
September	12	0	0	12	25,836
October	10	2	1	7	19,866
November	11	2	0	9	21,213
December	5	2	0	3	9,939
Total	108	20	1	87	205,006

WESTERN KENTUCKY
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	47	23	0	24	63,239

Month—	Comp.	Oil	Gas	Dry	Footage
February	26	12	0	14	31,902
March	33	15	2	16	33,407
April	29	16	2	11	40,568
May	50	28	1	21	62,246
June	47	20	0	27	56,332
July	53	21	0	32	69,087
August	49	26	0	23	68,174
September	33	18	0	15	47,528
October	48	27	0	21	61,255
November	37	20	1	16	49,567
December	23	13	0	10	38,020
Total	475	239	6	230	621,325

WESTERN KENTUCKY
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	61	26	0	35	84,775
February	29	13	0	16	36,845
March	44	17	2	25	52,868
April	36	16	2	18	51,996
May	56	30	1	25	72,923
June	56	22	0	34	72,592
July	63	23	0	40	90,545
August	59	28	0	31	90,563
September	45	18	0	27	73,364
October	58	29	1	28	81,121
November	48	22	1	25	70,780
December	28	15	0	13	47,959
Total	583	259	7	*317	826,331

*Includes 5 service wells.

WESTERN KENTUCKY
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Butler	4	0	0	4	5,507
Daviess	14	3	1	10	21,839
Hancock	4	0	0	4	3,972
Henderson	22	6	0	16	52,147
Hopkins	11	0	0	11	22,379
Logan	5	0	0	5	2,691
McLean	15	4	0	11	28,351
Union	14	5	0	9	28,696
Webster	4	1	0	3	11,523
Miscellaneous	15	1	0	14	27,901
Total	108	20	1	87	205,006

WESTERN KENTUCKY
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Bells Run	14	4	0	10	10,581
Birk City	23	14	0	9	39,899
Buford	4	2	0	2	3,278
Cairo, North	5	3	0	2	9,465
Cane Run	37	20	1	16	27,129
Fordsville	26	14	1	11	12,417
Geneva	4	2	0	2	8,682
Griffiths	34	26	0	8	37,583
Guffie	31	25	0	6	63,058
Gus	9	2	1	6	3,772
Guston	5	3	0	2	2,703
Hebbardsville	5	5	0	0	7,476
Hitesville	13	13	0	0	23,439
Huntsville	10	3	0	7	4,842
Johnson Island	23	17	0	6	46,068
Lewisburg	7	2	0	5	4,101
Livermore	6	1	0	5	10,048
Morganfield, S.	26	20	0	6	44,809
Pellville	15	6	0	9	14,252
Poole, East	20	12	1	7	37,902
Red Hill	8	2	0	6	10,306
Sunnydale	21	4	0	17	11,046
Tunnel Hill	4	3	0	1	7,945
Uniontown	12	8	0	4	20,863
Whitesville	5	3	0	2	4,865
Zion	4	2	0	2	8,780
Miscellaneous	104	23	2	79	146,016
Total	475	239	6	230	621,325

SOUTH-CENTRAL KENTUCKY
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
March	2	2	0	0	3,825
September	1	1	0	0	466
November	1	1	0	0	671
Total	4	4	0	0	4,962

SOUTH-CENTRAL KENTUCKY
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
March	6	5	0	1	7,172
April	3	3	0	0	3,248
May	4	4	0	0	2,837
June	5	4	0	1	4,956
July	6	4	0	2	5,950

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PIPE WRENCH ECONOMY

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RIDGID
WORK-SAVER PIPE TOOLS
THE RIDGE TOOL CO. • ELYRIA, OHIO

Month—	Comp.	Oil	Gas	Dry	Footage
August	1	1	0	0	750
September	10	9	1	0	8,920
October	4	4	0	0	4,410
November	4	2	0	2	1,748
December	5	3	0	2	2,022
Total	48	39	1	8	42,013

SOUTH-CENTRAL KENTUCKY
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
March	8	7	0	1	10,997
April	3	3	0	0	3,248
May	4	4	0	0	2,837
June	5	4	0	1	4,956
July	6	4	0	2	5,950
August	1	1	0	0	750
September	11	10	1	0	9,386
October	4	4	0	0	4,410
November	5	3	0	2	2,419
December	5	3	0	2	2,022
Total	52	43	1	8	46,975

EASTERN KENTUCKY
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	3,169
February	2	0	0	2	4,235
March	1	0	0	1	2,167
April	3	0	0	3	5,9.6
May	1	0	0	1	2,116
June	2	0	1	1	3,922
July	5	1	0	4	8,195
September	3	0	0	3	8,311
October	5	0	0	5	14.641
November	1	0	0	1	3,212
December	2	0	0	2	4,586
Total	27	1	1	25	60,456

EASTERN KENTUCKY
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	19	1	15	3	45,232
February	22	0	13	9	57,114
March	35	4	25	6	84,712
April	7	3	2	2	8,014
May	7	3	1	3	11,702
July	5	5	0	0	5,790
August	10	2	8	0	28,628
September	28	4	15	9	69,412
October	42	6	25	11	97,722
November	35	7	22	6	83,657
December	36	11	16	9	88,815
Total	246	46	142	58	580,798

EASTERN KENTUCKY
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	21	1	15	5	48,401
February	24	0	13	11	61,349
March	36	4	25	7	86,879
April	10	3	2	5	13,920
May	8	3	1	4	13,818
June	2	0	1	1	3,922
July	10	6	0	4	13,985
August	10	2	8	0	28,628
September	31	4	15	12	77,723
October	47	6	25	16	112,363
November	36	7	22	7	86,869
December	38	11	16	11	93,397
Total	273	47	143	83	641,254

TENNESSEE
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	4,506
February	2	0	0	2	2,516
March	5	2	0	3	6,108
April	3	0	0	3	5,931
May	5	0	0	5	10,361
June	6	0	0	6	11,036
July	2	0	0	2	1,792
August	2	0	0	2	1,020
September	4	1	0	3	8,730
October	3	0	0	3	5,150
November	4	0	1	3	2,563
December	2	0	0	2	1,267
Total	40	3	1	36	60,980

TENNESSEE
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	1	0	0	1,671
April	2	2	0	0	978
May	1	0	0	1	743
June	1	1	0	0	745
July	2	1	0	1	1,072
September	2	2	0	0	1,098
October	4	1	0	3	2,495
November	3	1	0	2	3,874
December	2	1	0	1	1,142
Total	18	10	0	8	13,818

TENNESSEE
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	1	0	2	6,177
February	2	0	0	2	2,516
March	5	2	0	3	6,108
April	5	2	0	3	6,909
May	6	0	0	6	11,104
June	7	1	0	6	11,781
July	4	1	0	3	2,864
August	2	0	0	2	1,020
September	6	3	0	3	9,828
October	7	1	0	6	7,645
November	7	1	1	5	8,437
December	4	1	0	3	2,409
Total	58	13	1	44	74,798

WEST VIRGINIA
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	16	0	7	9	50,035
February	7	0	3	4	26,431
March	10	2	3	5	36,036
April	10	0	4	6	44,860
May	7	1	2	4	21,607
June	9	0	7	2	27,297
July	9	0	5	4	29,486
August	3	0	1	2	16,696
September	3	0	1	2	16,393
October	3	0	2	1	15,962
November	5	0	1	4	30,637
Total	82	3	36	43	315,440

WEST VIRGINIA
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	62	9	45	8	127,670
February	41	7	31	3	89,688
March	47	3	35	9	116,849
April	60	12	40	8	133,227
May	58	8	39	11	143,812
June	47	13	26	8	109,477
July	80	12	54	14	207,758
August	65	14	41	10	161,612
September	89	20	53	16	228,341
October	72	19	42	11	168,313
November	68	16	38	14	170,008
December	75	12	55	8	220,675
Total	764	145	499	120	1,877,440

WEST VIRGINIA
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	78	9	52	17	177,705
February	48	7	34	7	116,119
March	57	5	38	14	152,885
April	70	12	44	14	178,097
May	65	9	41	15	165,419
June	56	13	33	10	136,774
July	89	12	59	18	237,244
August	68	14	42	12	178,306
September	92	20	54	18	244,734
October	75	19	44	12	184,275
November	73	16	39	18	200,645
December	75	12	55	8	220,675
Total	846	148	535	*163	2,192,880

*Includes 3 service wells.

NEW YORK
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	85	43	0	42	121,528
February	124	62	0	62	176,948
March	144	73	0	71	205,730
April	101	51	0	50	146,068
May	98	49	0	49	141,969
June	122	61	0	61	170,972
July	114	57	0	57	165,361
August	120	60	0	60	174,186
September	119	60	0	59	172,305
October	111	56	0	55	160,051
November	118	59	0	59	170,328
December	88	44	0	44	127,146
Total	1,344	675	0	*669	1,932,612

*Includes 669 service wells.

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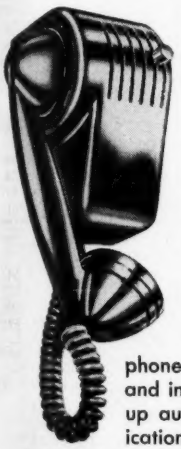
WHEELER

SELF-POWERED TELEPHONES



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BALL-TO-ANGLE SEAT

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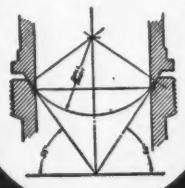

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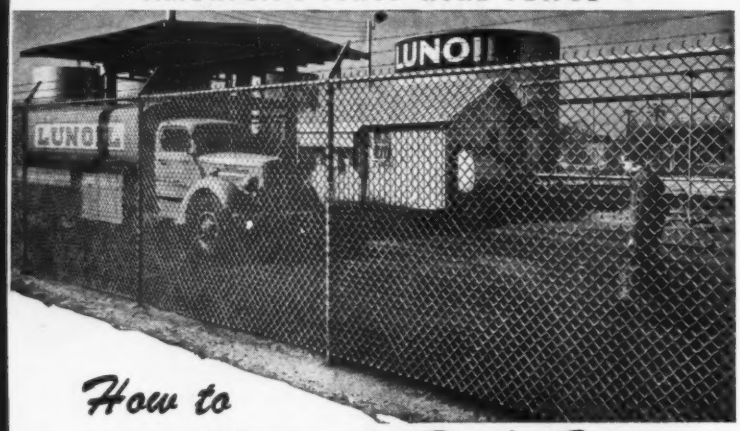

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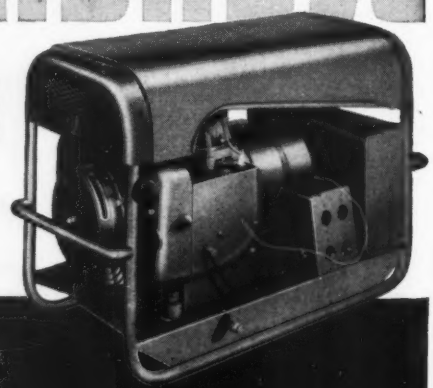
for Oil Field Service



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Models for every oil field job

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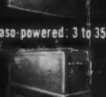

Diesel Plants: 2½ to 35KW

Onan PRODUCTS

Heavy-duty, one and two-cylinder air-cooled models. Two, four and six-cylinder water-cooled models. Gas-gaso-powered: 350 to 35,000 watts. Diesel-powered: 2,500 to 35,000 watts.

Write for Folder

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5782 Royalston Ave. Minneapolis 5, Minn.

PENNSYLVANIA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	4	0	0	4	16,132
February	6	0	1	5	27,206
March	3	0	3	0	10,804
April	3	0	2	1	6,444
May	4	0	3	1	13,122
June	1	0	0	1	2,826
August	2	0	0	2	5,716
September	1	0	0	1	4,015
Total	24	0	9	15	86,269

PENNSYLVANIA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	225	109	19	97	351,379
February	206	104	14	88	327,849
March	220	109	18	93	363,555
April	257	134	15	108	423,348
May	233	120	14	99	378,727
June	280	138	17	125	463,502
July	281	147	19	115	456,705
August	297	156	19	122	473,323
September	313	159	25	129	517,595
October	300	157	21	122	480,739
November	290	147	16	127	464,665
December	233	115	22	96	380,115
Total	3,135	1,595	219	1,321	5,081,592

PENNSYLVANIA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	229	109	19	101	367,571
February	212	104	15	93	355,055
March	223	109	21	93	374,359
April	260	134	17	109	429,792
May	237	120	17	100	391,849
June	281	138	17	126	466,328
July	281	147	19	115	456,795
August	299	156	19	124	479,038
September	314	159	25	130	521,610
October	300	157	21	122	480,739
November	290	147	16	127	464,665
December	233	115	22	96	380,115
Total	3,159	1,595	228*1336		5,167,857

*Includes 1,270 service wells.

VIRGINIA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
February	1	0	1	0	2,301
March	2	0	0	2	4,300
April	1	0	0	1	4,307
May	1	0	0	1	3,784
June	1	0	0	1	4,216
July	1	0	0	1	4,125
August	1	0	0	1	4,565
September	1	0	0	1	2,416
Total	9	0	1	8	30,014

VIRGINIA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	1	0	0	1,575
April	1	1	0	0	1,500
May	1	0	0	1	3,130
June	1	0	0	1	2,000
August	2	1	0	1	3,275
October	1	0	0	1	1,746
Total	7	3	0	4	13,226

VIRGINIA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	1	0	0	1,575
February	1	0	1	0	2,301
March	2	0	0	2	4,300
April	2	1	0	1	5,807
May	2	0	0	2	6,914
June	2	0	0	2	6,216
July	1	0	0	1	4,125
August	3	1	0	2	7,840
September	1	0	0	1	2,416
October	1	0	0	1	1,746
Total	16	3	1	12	43,240

MARYLAND

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	5,259
Total	1	0	0	1	5,259

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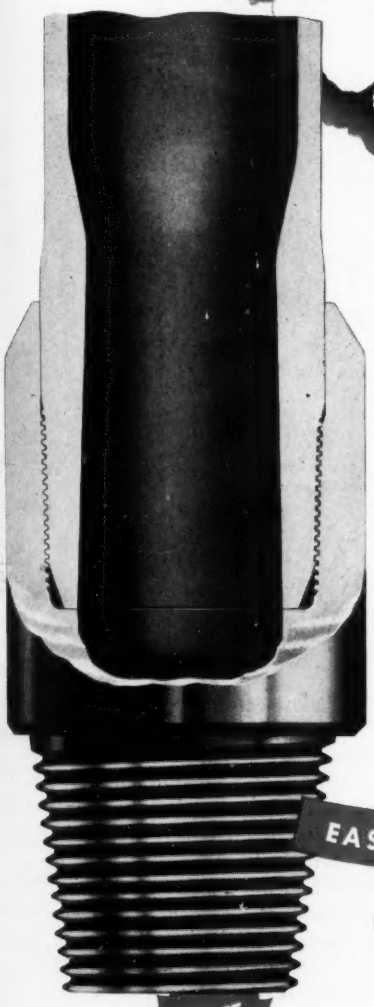

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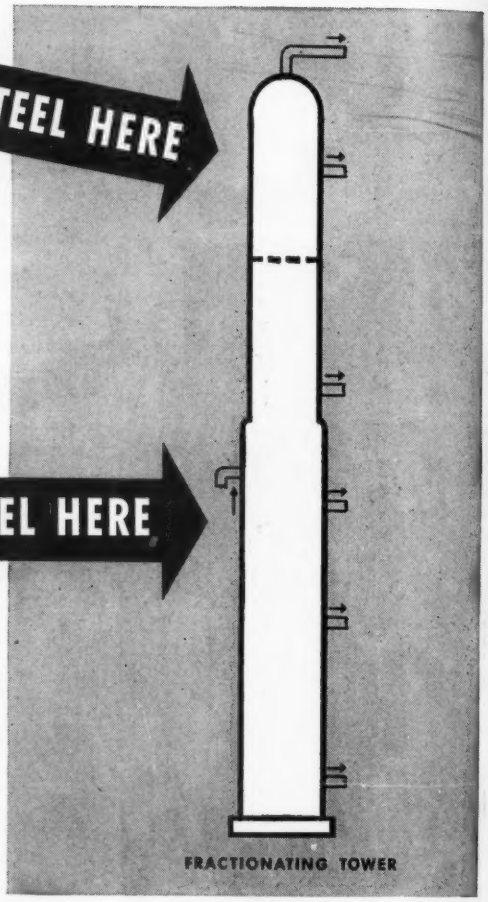
Material	Corrosion rate, inch penetration per year
Monel	0.003
Nickel	0.006†
Inconel	0.017†
18-8 Mo stainless steel (type 316)	0.053†
18-8 stainless steel (type 304)	Completely corroded away

*In straight run gasoline vapor in top of tower. Average temperature 250° F. Duration of test, 60 days. West Texas crude.
†These materials suffered pitting attack.

AND OF STAINLESS-CLAD STEEL HERE

PLANT CORROSION TESTS* IN BOTTOM OF CRUDE TOPPING TOWER	
Material	Corrosion rate, inch penetration per year
Monel	0.17
Nickel	Completely corroded away
Inconel	0.0002
18-8 Mo stainless steel (type 316)	Less than 0.0001
13 percent Cr steel (type 410)	0.0014

*At bottom of crude fractionating tower, approximately 5″ above tray No. 38 near the overflow side. Average temperature 700° F. Duration of test 120 days. East Texas crude. 88 gal. per hr. Na_2CO_3 injected into crude feed.



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Bulletin No. 461 describes Lukens Clad Steel installations in the Petroleum Industry. For copies, write Lukens Steel Company, 455 Lukens Building, Coatesville, Pennsylvania.

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SOLID METAL ADVANTAGES WITH CLAD STEEL ECONOMY

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PROGRESS IN METALS

by W. L. Nelson
Consulting Engineer

Comparison of Plastics And Metals

THE use of plastics is increasing rapidly until plastics are now used almost as widely as such metals as copper or aluminum. The production of these materials, according to the American Iron & Steel Institute, the American Bureau of Metals Statistics, and the U. S. Tariff Commission, during 1939 and 1944 was:

	1939 10^6 lb.	1944 10^6 lb.
Steel	105,597	179,283
Copper	2,279	3,691
Aluminum	427	2,179
Plastics	255	907
Magnesium	7	367

However, the total of aluminum, magnesium, and plastics in 1944 is only 1.9 per cent of the steel production.

There are literally hundreds of specific-service plastics, but the following general classification is reasonable (Chollar, R. G., Metals and Plastics, A.S.T.M. Bull., May 1948).

1. Molded "phenolics" encompass both general-purpose and impact-type materials.

2. Laminated "phenolics" cover the paper and fabric-base materials.

3. Data were acquired on typical low-pressure mold materials in the case of the glass laminates.

4. Data for "ureas" apply to the cellulose-filled general-purpose types.

5. Injection-molded materials as covered by the three A.S.T.M. listed types are considered in the case of vinyl chloride-acetate.

6. Methyl methacrylates include both compression and injection materials of the general-purpose and heat-resistant grades.

7. The data for polystyrene cover the range listed by the Plastics Materials Manufacturers Association and found in the "A.S.T.M. Standards on Plastics."

8. The FM-1 nylon material is representative of the nylon data listed.

9. "Cellulosics" include the acetate butyrate, and ethyl cellulose and the data embrace compression and injection material for the S-3 and H-4 grades.

Some of the properties of these materials are shown in Table 1 (Chollar, R. G.). Note that costs of many of the plastics (Column 2 of Table 1) are in the same range as the cost of steel. However, the cheapest of the plastics (molded phenolics) costs five times as much as the cheapest steel.

The plastics are inferior to the metals in strength, thermal expansion, modulus of elasticity, cold flow, heat resistance, water absorption, and hardness. They are, however, certain properties in which the plastics excel such as low density, ease of fabrication, high damping capacity, and a low unit cost for mass-produced items.

Forging Terms or Operations

FORGE WELDING

This operation is somewhat similar to pressure electric welding, which was defined on this page of the July 8, 1943, issue (page 43) except that union of the surfaces is accomplished entirely by pressure applied to the plastic (hot) metal. The two or more pieces are united by heating to incipient fusion, and forcing the surfaces together by means of a forging press or power hammer. A flux is applied to eliminate the formation of an oxide film. Forge welding is used extensively in the smith shop.

TABLE 1—COMPARISON OF PLASTIC AND METAL PROPERTIES

	Specific gravity	Comparative cost	Comparative hardness	Comparative shock resistance	Tensile strength, psi.	Thermal expansion 10^{-5} per °C.	Thermal conductivity 10^{-4} cal. per sec. per sq. cm. per °C. per cm.	Heat distortion at 264 psi., °F.	Dielectric strength, volts per mil.	Modulus of elasticity, psi. $\times 10^{-5}$	Damping capacity	Deformation under load at 4,000 psi. at 122°F., 24 hr., %	Water absorption 24 hr., %	Color possibilities
Phenolics (molded)	1.4	5-10	45	1-33	5,000 12,000	3.0	4-7	275	250-400	7-15	High	0.4	0.4-2	Limited
Phenolics (laminated)	1.4	18-24	33	3-48	5,000 15,000	1.5	5-8	>325	200-700	7-30	High	Low	1-4	Limited
Glass laminates	1.7	33-40	40	25-130	40,000 50,000	0.6	3-5	>320	450-650	20-25	High	Low	0.3-0.6	Limited
Ureas	1.5	10-14	48	1.0	5,000 13,000	3.0	7.0	275	300-500	12-15	High	0.55	1-3	Unlimited
Vinyl chloride—acetates	1.4	16-23	18	1-2	6,000 10,000	6.9	4.0	130	400	4	High	*1-20	0.1	Unlimited
Methyl methacrylates	1.2	28	26	1-2	6,000 10,000	8.0	4-6	140-200	500	*3-6	High	2-12	0.4	Unlimited
Polystyrene	1.1	9-14	20	1-2	5,000 9,000	7.0	2-3	160-180	500-700	2-6	High	0.5-5	0-0.05	Unlimited
Polyamide	1.1	53	26	4-6	7,000 10,000	10.0	6.0	170	375	3-4	High	4.0	1.5	Unlimited
Cellulosics	1.2	14-24	10	2-38	2,000 10,000	12.0	4-8	110-215	250-600	0.5-4	High	*1-65	1-6	Unlimited
Steel (exc. tool steel)	7.8	1-17	120-800	17-300	40,000 250,000	1.26	1,150	†1,000	Conductor	280	Low	Nil	0	External Applications
Aluminum, pure and alloys	2.7	5-8	30-115	8-65	13,000 76,000	2.40	4,800	†460	Conductor	103	....	Nil	0	External Applications
Magnesium alloys	1.7	7	40-95	3-30	20,000 48,000	1.43	2,500	†450	Conductor	65	Intermediate	Nil	0	External Applications
Zinc alloys	7.1	4-5	70-100	105-140	30,000 52,000	2.63	2,700		Conductor	124	....	Nil	0	External Applications

*Extreme deformation characteristics of material required test method revision to 1,600-psi. load for 6 hours. †Above these temperatures physical properties drop rapidly.

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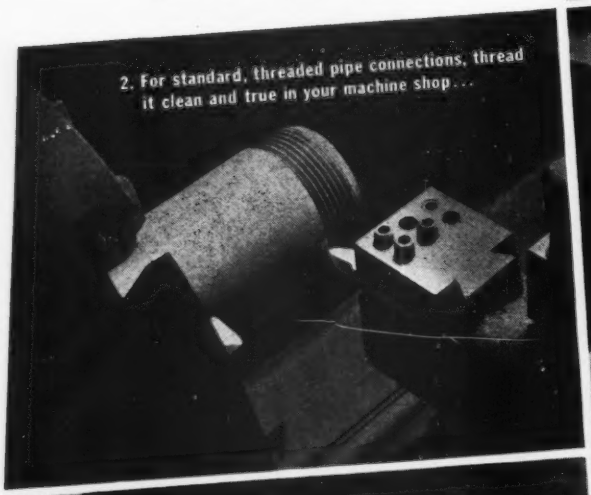

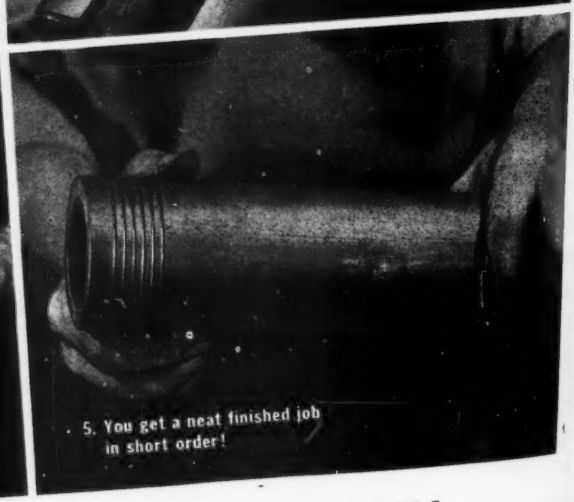

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Cost-imating

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

Pipe Insulation

(See Cost-imating No. 13 for Block Insulation)

TABLE 1—RECOMMENDED THICKNESSES OF OUTSIDE* PIPING INSULATION[1,4] (INCHES)

Temp., °F.	Under 2-in. pipe	2-4-in. pipe	5-in. and larger pipe
Low	⅞	1 or std.	Std.
200- 268	⅞	1 or std.	Std.
268- 338	⅞	1 or std.	1½
338- 388	⅞	1½	1½-2
388- 500	1½	2	2
500- 600	1½	2	2½
600- 700	†2	‡2	‡2½
700- 800	†2	‡2	‡3
800- 900	†2	‡2	‡3
900-1,000	†2	‡2	‡3
1,000-1,200	2½	‡2	‡3

*Inside location ½-in. less thickness, for underground 1-in. less thick, and for fire protection ½-in. less thick; but these apply only to insulation 1½-in. or thicker. †Ref. 4 uses only diatomaceous silica (high temperature insulation). ‡Ref. 4 uses thinner magnesia or wool by ½-1-in. but employs about the same amount of diatomaceous silica as well as the magnesia.

TABLE 2
Standard Magnesia Pipe Covering

Pipe size (in.)	Thickness of insulation (in.)
½-1½ std.*	⅞ & 1¾
2-3½ std.*	1 1/32 & 2 1/16
4-6 std.*	1⅛ & 2¼
7-10 std.*	1¼ & 2½
11-33 std.*	1½ & 3
½-33	1½
½-33	2
½-33	2½
½-33†	3
½-33‡	3

*Also double standard made by using two layers. †Diameter of inside layer fits pipe. ‡Diameter of outside layer fits over inside insulation.

TABLE 3—COST OF INSTALLED PIPE COVERING,[2,3,5] DOLLARS PER LINEAR FOOT, 1946*

Pipe size (in.)	Standard M	Standard L	Standard M & L	1½ in. thick M & L	2 in. thick M & L	3 in. thick M	3 in. thick L	3 in. thick M & L	Dollars per f.b.m. based on nominal pipe† size M & L
¾	.14	.77	.91	1.14	1.37	.77	1.01	1.78	3.00-5.30
1	.16	.78	.93	1.18	1.42	.80	1.03	1.83	2.32-4.05
1½	.19	.83	1.02	1.27	1.52	.89	1.08	1.97	1.68-2.96
2	.21	.86	1.07	1.33	1.59	.95	1.11	2.06	1.30-2.02
3	.26	.91	1.17	1.45	1.72	1.09	1.16	2.25	0.96-1.48
4	.34	.96	1.30	1.56	1.88	1.26	1.21	2.47	0.80-1.21
6	.46	1.06	1.52	1.79	2.19	1.55	1.31	2.86	0.60-0.86
8	.63	1.26	1.89	2.13	2.56	1.81	1.51	3.32	0.53-0.72
10	.75	1.50	2.25	2.54	3.03	2.10	1.75	3.85	0.49-0.69
12	1.06	2.12	3.18	3.18	3.82	2.36	2.37	4.73	0.50-0.67
16	1.35	2.44	3.79	3.79	4.49	2.92	2.69	5.61	0.45-0.60
20	1.64	2.96	4.60	4.60	5.41	3.44	3.21	6.65	0.42-0.58
24	1.90	3.04	4.94	4.94	5.77	4.02	3.29	7.31	0.39-0.52
30	2.30	3.70	6.00	6.00	7.01	4.82	3.95	8.77	0.37-0.51

*Based primarily on magnesia insulation. Mineral wool is somewhat cheaper in larger sizes but with labor costs, the installed cost is much the same. High temperature diatomaceous earth or silica insulation costs 40 to 90 per cent more. Includes material, cement, hauling, scaffolding, and weatherproof cover. †The low cost is for a 3-in. thickness insulation.

TABLE 4—COSTS OF INSTALLED INSULATION IN A BOARD FOOT BASIS,[6] 1946

	Dollars per board foot— Vessels	Pipe*
Low-temperature, cork	0.25-0.40	0.50-2.00
Low-temperature, mineral wool	0.02-0.05	0.10-0.50
High-temperature, to 600° F.	0.60-1.50	0.75-2.50
High-temperature, over 600° F.	1.00-2.00	1.50-3.50

*Based on the outside diameter of the pipe. The higher prices are for the smaller sizes of pipe.

References

1. Anon., Petroleum Processing, Nov. 1946, p. 192.
2. Otto, F. C., Estimating Magnesia Insulation Costs, Chem. Eng., Sept. 1947, p. 126.
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4. Hanson, L. A., Insulation Data on a Large Combination Unit, Pet. Refiner. Sept. 1947, p. 112.
5. Author's files with data at 1928, 1929, 1937, and 1948.
6. Happel, Aries and Borns, Chem. Engineering, Dec. 1946.

No. 15 in a series by W. L. Nelson, professor of petroleum refinery engineering, University of Tulsa

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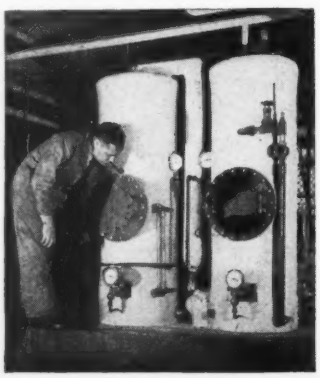

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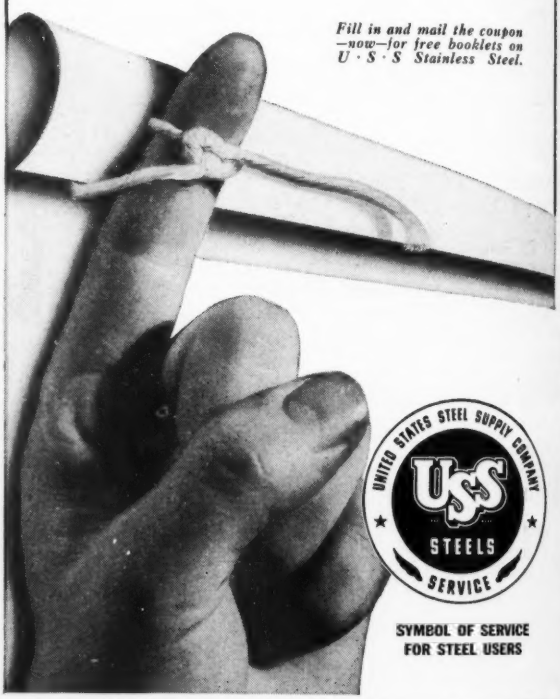

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REFINING

Improvements Cut Costs of Gasoline-From-Coal Output

WASHINGTON.—Construction and manufacturing costs of plants for the production of gasoline from coal can be cut by improvements in equipment design and modification of some processes, it was reported last week by the Bureau of Mines.

The economics were worked out by bureau engineers at the demonstration plant at Louisiana, Mo., by the use of improved pressure gasification processes, fully automatic control, cheaper high-pressure vessels and more efficient use of heats of reaction, the bureau said.

The bureau estimated that a hydrogenation plant to produce 30,000 bbl. of gasoline and liquefied petroleum gas daily could be constructed at a cost of $244,000,000 with newly tested innovations but would cost 25 per cent more without those innovations. Gasoline-manufacturing costs in such a plant were estimated at 14.3 cents per gallon, but this figure did not include a revenue from byproducts, such as phenols, which are valuable, or on the other hand, return on investment, sales expenses, and other expenses incidental to the disposal of the synthetic products.

McCarthy Chemical Co. Sells $15,000,000 Bonds

McCarthy Chemical Co., wholly owned subsidiary of McCarthy Oil & Gas Corp., recently reported the sale of $15,000,000 of 4 per cent, 10-year first-mortgage bonds to the Metropolitan Life Insurance Co. for the purpose of repaying advances made by the parent company to build chemical plants and related facilities, and to provide working capital.

McCarthy Chemical Co. produces petrochemicals from natural gas produced in Jefferson and Chambers counties, Texas. McCarthy recently completed a plant at Winnie, Tex., and a second absorption plant is at present under construction.

Residue gas from the plants is sold to domestic, commercial, and industrial consumers in Beaumont, Orange, Port Arthur, and the mid-Jefferson County area.

Gasoline Consumption Is Up 9 Per Cent Over 1947

Consumption of motor fuel in the United States increased approximately 9 per cent in 1948 over 1947 reaching a new all-time high of 30,700,000,000 gal., according to a preliminary report received by the Public Roads Administration of the Federal Works Agency from state tax collection agencies.

Revenues from state gasoline tax receipts in 1948 were estimated at $1,350,000,000, an increase of more than $140,000,000 over the 1947 total.

Travel on the nation's highways increased from approximately 370 billion miles in 1947 to an estimated 395 billion miles last year.

The number of privately owned automobiles registered in 1948 was estimated at 33,225,000 or approximately 2,500,000 more than the 1947 total. Truck and bus registrations increased from 6,641,611 in 1947 to approximately 7,332,000 in 1948.

Capsule Is Used in New Quick-Starting Device

A gelatine capsule containing basically an ethyl-ether compound is a special patented cold-weather quick-starting devise recently developed by California Research Corp. for use in diesel and gasoline-powered equipment in cold climates. Diesel engines have been started in less than 10 seconds at —50° F., company officials reported.

The capsules, which come in two sizes, 17 cc. and 7 cc., are used with a special puncturing tool and priming system, injecting the fluid into the intake manifold. The fluid flows at —70° F. and additives contained in the starting fluid act as a lubricant as the engine is started. The fluid will not corrode metal parts.

The new product, known as Chevron starting fluid, was developed through wartime research by company engineers to expedite wartime operations in Alaska.

The present method of packaging and application was developed by California Oil Co.

Pure-O.W.I.U. Contract For Toledo Plant Signed

A 1-year contract covering the Pure Oil Co. Toledo, Ohio, refinery operating employes has been signed by the company and the local Oil Workers International Union (C.I.O.)

The new contract provided for only minor changes, and wages were not a major issue, the company reported. An office and laboratory contract was also signed at the same time. The

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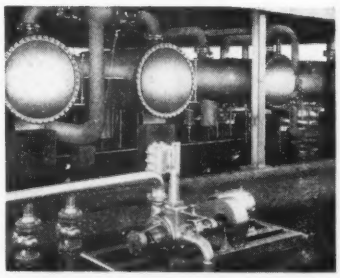

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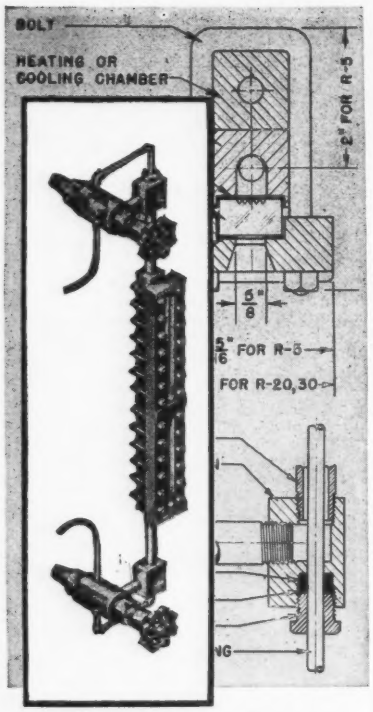

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Refinery Engineering Is Awarded Hi-Way Contract

Contract for the Hi-Way Refineries, Ltd., refinery to be built at Saskatoon, Saskatchewan, Canada, has been awarded Refinery Engineering Co., Tulsa.

The contract calls for the design, engineering, and construction of the Saskatoon refinery, which will include a 2,000-bbl. daily crude topping unit and a 500-bbl. daily Dubbs thermal cracking unit.

USGS Issues Report on Colorado Shale-Oil Reserve

A larger reserve of oil than had hitherto been estimated in oil-shale beds cropping out in Naval Oil Shale Reserves 1 and 3, Garfield County, Colorado, is revealed by a comprehensive study made by the U. S. Geological Survey in cooperation with the Department of Navy, office of petroleum and oil-shale reserves.

The study shows the geology of an area northwest of Rifle, Colo., covering about 175 sq. miles, of which about 85 sq. miles is underlain by oil shales ranging from 700 to 1,200 ft. thick, averaging 10 to 15 gal. of oil yield per ton, with a total potential yield of about 40 billion barrels of oil.

The area covered by the map is only a small part of the total area underlain by the oil shales of the Green River formation which is widespread in Colorado, Utah, and Wyoming.

Copies of the study consisting of two sheets and entitled "Geology of Naval Shale Reserves 1 and 3, Garfield County, Colorado," may be purchased from the director, U. S. Geological Survey, Washington 25, D. C., for $1.00 and will be available for over-the-counter sale at other Geological Survey offices.

Hydrocarbon Samples Total 156 Compounds

A total of 156 compounds have been prepared and are now available as National Bureau of Standards standard samples of hydrocarbons for calibrating analytical instruments and apparatus in the research, development, and analytical laboratories of the petroleum, rubber, chemical, and allied industries. Preparation of the samples began in 1943 through a cooperative program of the NBS and the American Petroleum Institute.

Instructions for transferring standard samples of hydrocarbons "in vacuum" are available on request. A complete list of NBS standard samples of hydrocarbons may also be obtained from the NBS, Washington 25, D. C.

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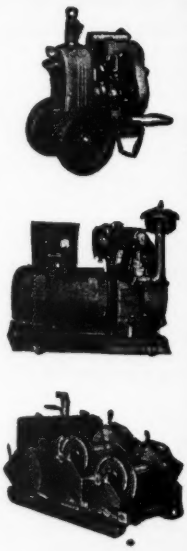

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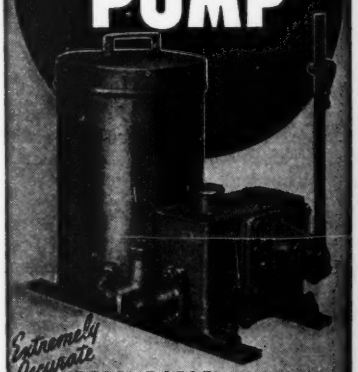

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Accuracy of delivery in McCord chemical pumps is the result of a finely engineered design with a minimum number of parts. Dependability is insured because working parts are fully enclosed, protected from dirt and the elements. Specify McCord. For sale by National Supply Co.

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Investigate the advantages of separately fired
SUPERHEATERS

a—if your furnace has an integral steam superheater, the addition of a PETRO-CHEM SEPARATELY FIRED SUPERHEATER will give a wide range of steam control, regardless of how the furnace is operated . . . furthermore, the surface of the integral steam superheater can be used to increase the furnace capacity.

b—a PETRO-CHEM SEPARATELY FIRED SUPERHEATER in your boiler plant will permit varying the temperature of the steam, independent of the boiler plant operation.

PETRO-CHEM SEPARATELY FIRED SUPERHEATERS are now being used in cracking, process and chemical plants where close regulation of the steam temperature is an important function to the efficient operation of the process.

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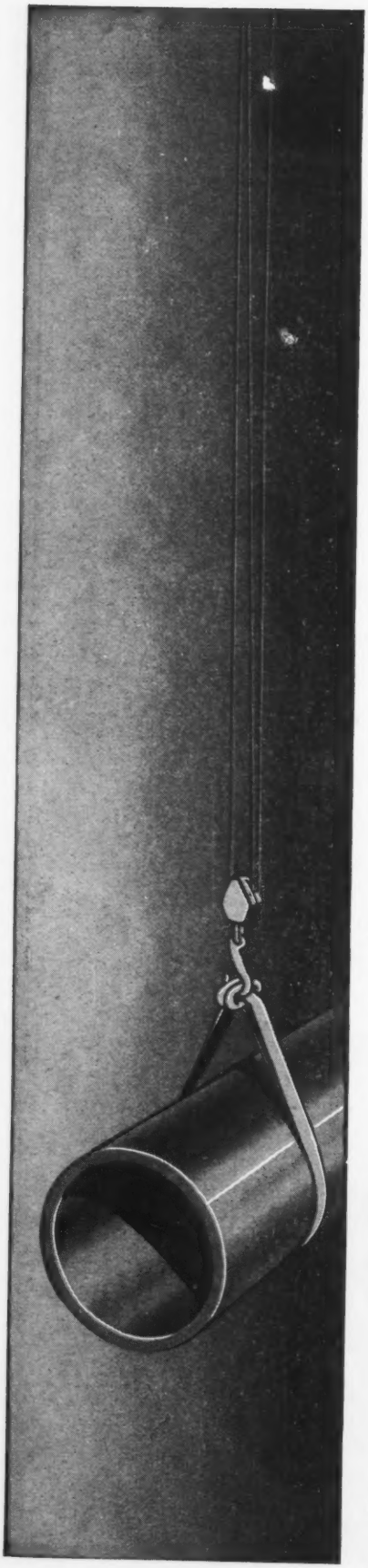

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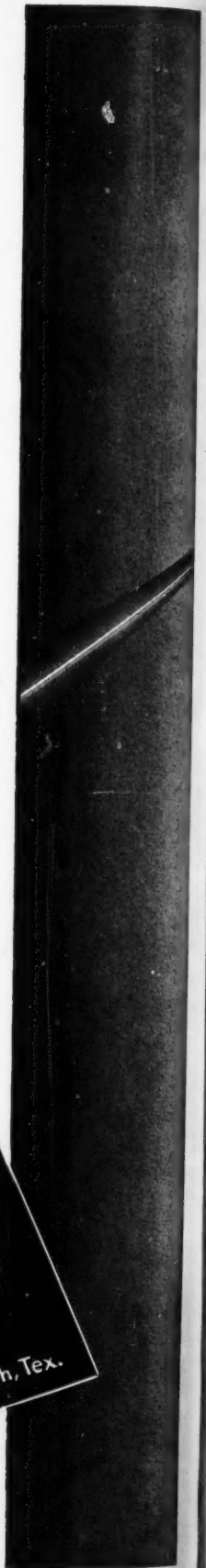

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PIPE LINES

Mid-Continent Gathers All Fitts-Jesse Area Oil

Mid-Continent Pipe Line Co. has taken over all connections in the Fitts-Jesse areas of Oklahoma. The most recent move toward this objective was acquisition of connections formerly served by Stanolind Pipe Line Co. Previously connections served by Magnolia Pipe Line Co. and Sinclair Refining Co. in the area had been taken over by Mid-Continent.

For the purpose of increasing the capacity of facilities for moving crude oil northward to the Mid-Continent Petroleum Corp. refinery at West Tulsa, Mid-Continent Pipe Line is reported to be planning the construction of loops totaling nearly 20 miles: (1) Mounds Junction-Sapulpa Junction, 10.2 miles, 10-in.; (2) Sapulpa Junction-West Tulsa, 9 miles, 8-in. Pipe will be laid in the second quarter.

Mid-Continent recently completed construction of a pump station at Maysville. The company's gas-engine-driven reciprocating pump station at Drumright, Okla., is to be modernized soon. Additional tankage is to be erected at Drumright and Seminole, Okla.

First Products Line in Maine Opened by Socony

The first petroleum products pipe line to be built in the state of Maine was officially opened January 15 by Socony-Vacuum Oil Co., Inc. The 127-mile 6-in. line, which was begun last summer, will serve the most populous area in the state with home heating oil, kerosine, and gasoline.

In addition to construction of the pipe line, a pumping station and dehydration plant have been built at South Portland. The marine terminal there has been enlarged by 60,000 bbl. and a 28,500-bbl. storage plant at Auburn replaces the former small one at Lewiston.

The new pipe line will carry products brought to Maine by Socony-Vacuum tankers from the company's refinery in Beaumont, Tex. After the products are deposited in the marine bulk storage plant in South Portland, they will be pumped through the line to storage plants at Auburn, Hallowell, and Bangor. From these points distribution will usually be made by tank trucks.

"Task Groups" Will Study Nation's Transport System

WASHINGTON.—The National Security Resources Board set up "task groups" last week to study the nation's domestic transport system and outline the steps to be taken to enable it to meet a national emergency.

Five such groups were set up by Capt. Granville Conway, director of the Office of Transport and Storage, one of which will study the pipe-line situation. Bruce C. Clardy, general manager of crude-oil supply for

Pictured here turning the valve and officially opening the Socony-Vacuum Oil Co., Inc., 127-mile products pipe line in Maine, is Gov. Frederick G. Payne. Left to right: George D. McDaniel, manager of Socony-Vacuum's eastern region; R. R. Potts, New England division manager; Howard M. Park, in charge of the company's real estate; A. E. Willis, district manager for Socony in Portland; Robert L. Getchell, chairman of the Portland city council; the governor; George H. Meloon, member of the governor's council; Philip G. Willard, chairman of the South Portland city council; Roy Hussey, member of the governor's council; and W. H. O'Brien, member of the Portland city council

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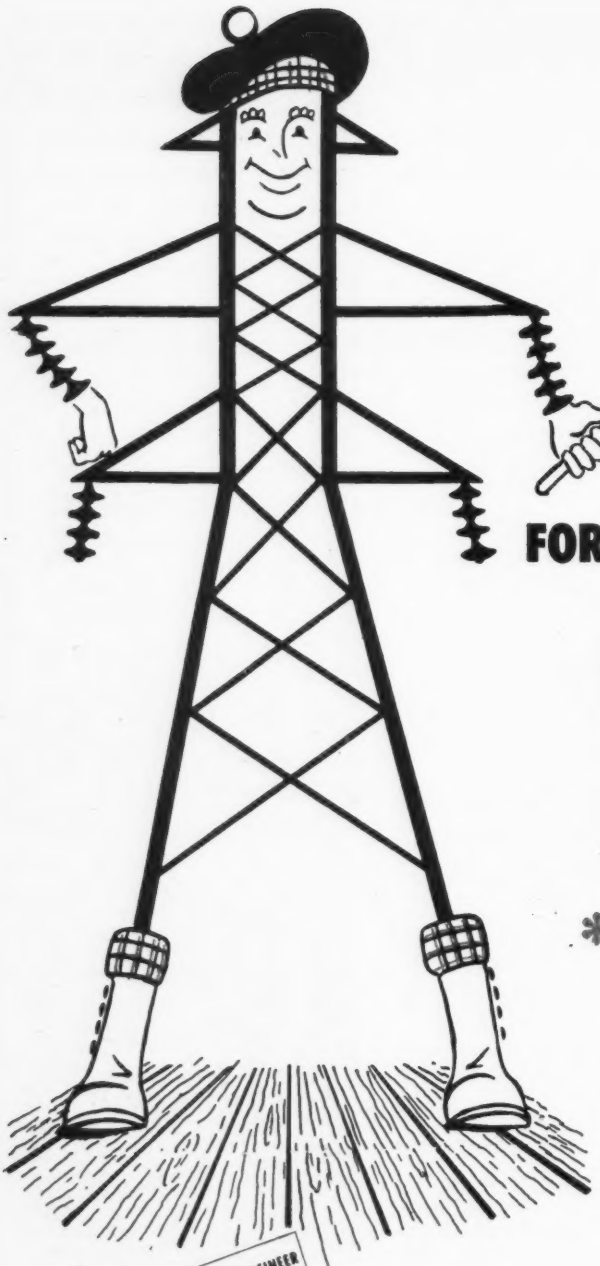

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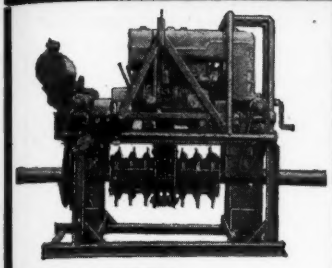

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with Crose pipe cleaning machines. Machines designed for pipe sizes from 2" to 30" diameter. Equipped for stationary or traveling operation. The machines with independent speed control on travel and priming head.

Available in 3 Models:
Model M—2" to 16" pipeline machine
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Available on rental or outright sale basis

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Standard Oil Co. (Ind.), will be chairman of the group, and Robert W. Shields of the bureau of valuation, Interstate Commerce Commission, secretary.

Other groups will study railroads, highways, and inland waters, and similar committees will be organized by Conway in the near future to examine shipping.

Industry, civilian agencies of the Government, and the military services are represented on each of the task groups, whose findings will be correlated by the NSRB staff into a comprehensive program for the mobilization of all transport in the event of an emergency.

A number of detailed reports will be made, covering such subjects as traffic movement, conservation, equipment, materials, allocation and rationing, rates, and war dislocations.

Bureau Studies "Freezing" Problem of Gas Pipe Lines

WASHINGTON. — The Bureau of Mines announced last week the success of a 13-year effort, interrupted only by the war, to find a solution for the "freezing" of natural-gas transmission lines in severe-winter areas.

Working in cooperation with the natural-gas department of the American Gas Association, bureau researchers found that this condition, occuring more frequently in high-pressure lines, was not due to the freezing of water in the gas but to the solidifying of crystalline compounds, known as natural-gas hydrates, which are formed by the chemical combination of water and natural gas. These hydrates solidify at temperatures considerably above the freezing point of water, and form ice-like plugs which obstruct and often completely stop the flow of gas.

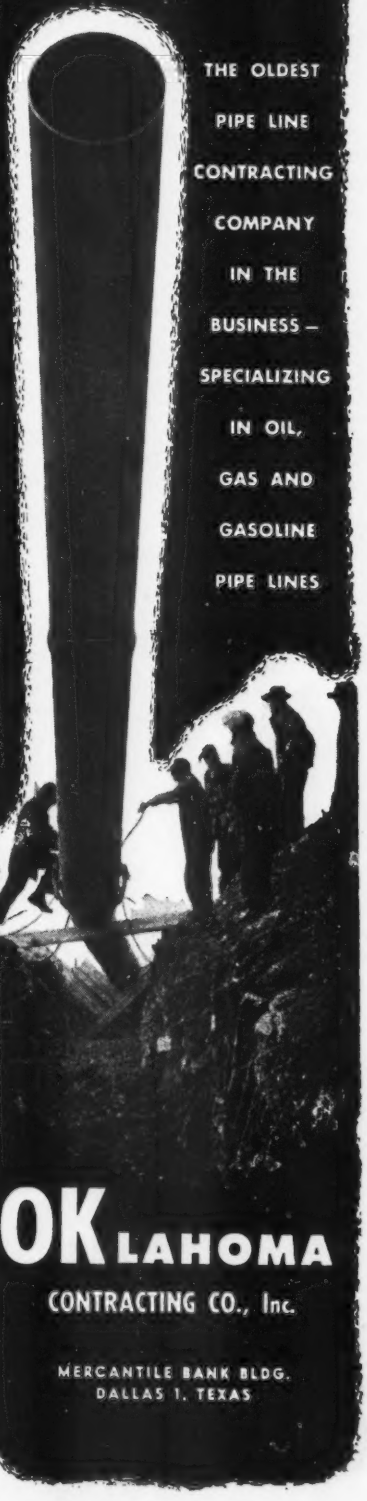
The most effective method for preventing the hydrate freezing of pipe lines is regarded as the removal of water from natural gas, since the hydrates will not form without water.

The results of the work are shown in a report on "Gas Hydrates and Their Relation to the Operation of Natural-Gas Pipe Lines," published by and obtainable only from the American Gas Association in New York, which describes various types of dehydration plants, and discusses the kinds of "freezes" that occur, their frequency, the times of most frequent occurrence, the location of "freezes" in the lines, the temperatures at which they occur, and remedial measures to remove or prevent them.

Army, Navy to Intervene In California Hearing

The Atomic Energy Commission and the National Military Establishment have been granted Federal

30 Years of
PROGRESS



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ALL PIGS ARE PROVIDED WITH THE EXCLUSIVE "JET ROTATION" FEATURE*

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Each Pig Is Designed To Traverse Specified Valves and Fittings — SAFELY

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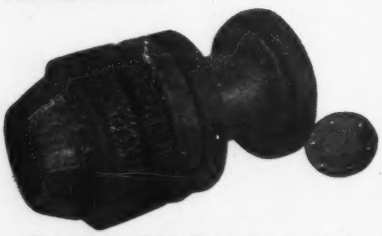
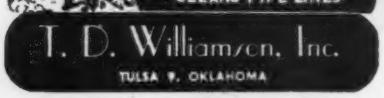


This Type RC-1 Pig, 16" size and larger, is for the usual conditions of:
Conventional gate valves
Full diameter, 90° laterals
Field bends, min. radius 10 ft

This 22" Type RC-5 will traverse
Through-conduit valves
Full diameter, 90° laterals
Factory ells, 1½ radius, 22½°

Type RC-1 Pigs, 14" size and smaller, must traverse
Various types of gate valves
Elongated side openings (laterals)
Small-angle sharp bends

*Patents pending



Power Commission to intervene in the consolidated proceedings on applications of El Paso Natural Gas Co., San Juan Pipe Line Co., and Pacific Gas & Electric Co. The three natural-gas companies have filed applications to build 1,484 miles of pipe line at a cost of approximately $146,000,000 to carry gas from the Texas-New Mexico area into the San Francisco Bay area.

In a petition filed by the Department of Justice on behalf of the United States, it was pointed out that the Army, Navy, and Air Force operate military and naval installations in California which use natural gas purchased from Pacific Gas, and during 1947 purchased approximately 7,063,000,000 cu. ft. at a cost of about $1,969,500. Purchases for 1948 were expected to total 7,225,759,000 cu. ft. at an approximate cost of $2,649,775. "For these and other reasons your petitioner is concerned with the matters and things which affect the supply of natural gas to its installations in . . . California," the petition stated.

In the petition filed by the Atomic Energy Commission the commission stated that it had "a direct interest" in the San Juan Basin natural-gas reserves, since its Los Alamos and Sandia Base projects are supplied by Southern Union Gas Co. with gas taken from the Basin. It also stated that with enlargement of the Los Alamos and Sandia projects now under way there would be a substantial increase in the power and heating requirements of the projects.

Hearings on the applications of the three natural-gas companies are scheduled to be resumed January 31 in San Francisco, Calif. El Paso Natural is seeking FPC authorization to construct facilities to transport and sell gas to Pacific Gas. Part of this gas is to be purchased from San Juan, which has requested authorization to construct facilities to deliver the gas to El Paso. Pacific Gas plans to construct 506 miles of line extending from the California-Arizona border to its terminal near Milpitas, Calif. The gas purchased from El Paso would be transported through this line.

Trunkline Gas Hearing Resumes February 1

Further hearings on the application filed by Trunkline Gas Supply Co. for authorization to construct a Louisiana-to-Iowa pipe line have been ordered by the Federal Power Commission to begin February 1 in Washington. Trunkline proceedings have been severed from the Mesabi Pipe Line Co. application which previously had been consolidated.

The FPC order also stated that since Mesabi has not indicated that it is prepared to go forward with the presentation of evidence, the hearing in connection with its application has been postponed.

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Emerson said it: "Some will always be above others — destroy the inequality today, and it will appear again tomorrow." McVean and Roberts typifies this unerring excellence in the pipeline industry. We push the line through, making sure every last foot will carry its share of the load . . . and more! The best in pipeline work has long been associated with the M & R "Sign of Reliability"!

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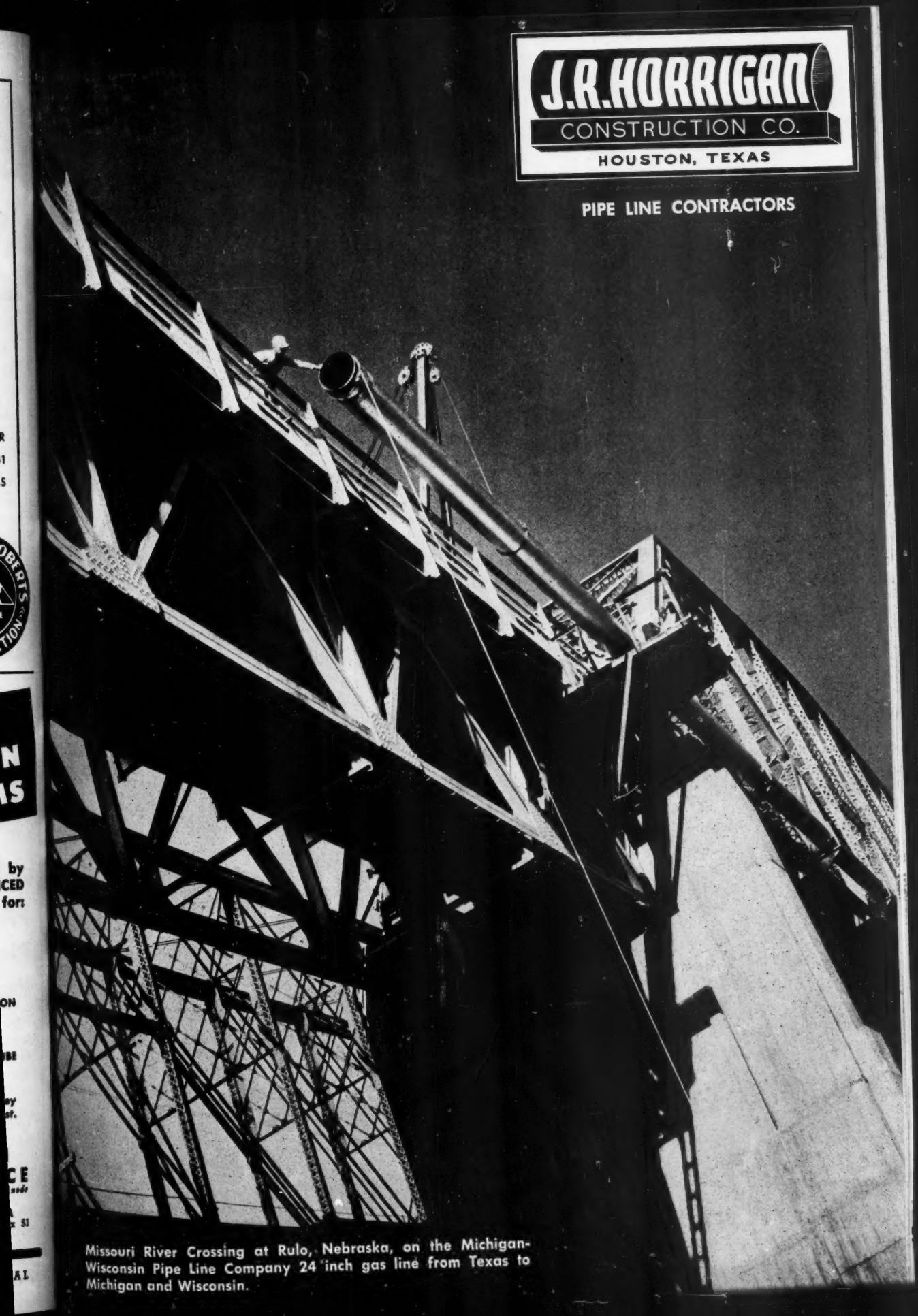

Missouri River Crossing at Rulo, Nebraska, on the Michigan-Wisconsin Pipe Line Company 24 inch gas line from Texas to Michigan and Wisconsin.

Larkin's Double-Spring Section Centralizer

MORE THAN FOUR TIMES THE CENTERING STRENGTH

The greater strength of the Larkin Long Casing Centralizer is now a matter of field record.

Here is the result, for example, of one impartial test made by oil company engineers: "A compression and deformation test was made—Larkin withstood better than 2,000 pounds more weight than any of the others."

Here's why Larkin Centralizers are stonger and have greater centering strength: Larkin Long Casing Centralizers are constructed with two spring sections in tandem. The shorter arc gives greater strength. There are twice the usual number of staves—offset to give greater peripheral bearing on the wall of the hole from four to twenty times the centering strength of other centralizers.

Specify Larkin Long Casing Centralizers. They will increase the efficiency of other tools and methods that might be employed to improve your cement job. They're sold through your supply store.

Installing one of a series of Larkin Centralizers on a casing string to assure positive centering.

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NATURAL GAS

Panhandle-Hugoton Hearing Postponed Until February 7

The hearing originally scheduled for January 24 by the Federal Power Commission involving the transfer of natural-gas reserves from Panhandle Eastern Pipe Line Co. to Hugoton Production Co., has been postponed until February 7 upon joint request of Panhandle and the FPC staff counsel.

Panhandle organized the Hugoton company and transferred the gas reserves in Kansas to Hugoton in exchange for that company's stock. FPC says Panhandle has presented these leases in support of applications to the commission for certification of public convenience and necessity, and may have incurred an obligation under the Natural Gas Act to continue devoting the reserves exclusively to public service in connection with its FPC-authorized facilities.

A recent FPC order has permitted representative stockholders of Panhandle Eastern to become parties in the proceedings of the investigation with full rights to participate in the February 7 hearing.

The commission said that the "representative" stockholders covered by its order are those holding 1 per cent or more of the company's voting securities and were made parties to the proceeding in order to assure that holders of Panhandle's common stock "will be enabled through class representation to present their interests. . . ."

Stockholders named by the order include Missouri - Kansas Pipe Line Co., Stephen Carlton Clark, Anderson & Co., Brown Brothers Harriman & Co., Insurance Co. of North America, Investors Trust Co., Frederick Ambrose Clark, Carothers & Clark, and Frank J. Lewis.

Buchanan Is Renamed To FPC Post

WASHINGTON. — Thomas C. Buchanan of Pennsylvania, whose nomination as a member of the Federal Power Commission was held up in the Senate last year in anticipation of a change of administration, was renamed to that post last week by President Truman.

Buchanan, who was formerly a member of the Pennsylvania Public Utilities Commission, has been serving under a recess appointment.

Members of the natural-gas industry have been watching the fifth seat on the FPC with interest in view of the 2-t. 2 split among the other members over the report on the commission's natural-gas investigation. They were hoping that someone other than Buchanan finally would get the post, since he supports the position of Commissioners Leland Olds and Claude Draper against modification of the Natural Gas Act.

Natural Gasoline

Cities Service Will Build New Plant in Chico Field

Cities Service Oil Co. has announced plans to build a natural-gasoline plant to process casinghead gas produced in Chico field of Wise County, Texas. Exact location of the plant was not made known.

Present plans call for an eventual processing capacity of 22,000,000 cu. ft. of gas daily and the installation of five 600-hp. units. Completion of the first step in the total program is scheduled some time late this year.

Since Cities Service brought in the first commercial oil production in Wise County in December 1947, approximately 25 producers have been completed in the field.

Magnolia Plant to Be Completed by April

The Sabine Valley natural-gasoline plant of Magnolia Petroleum Co. now under construction at Kilgore, Tex., is expected to be completed by April.

Expansion program of the new plant involves the extraction of a greater quantity of liquid products from the gas, especially propane. Propane recovery from the wet gas will be increased from 40 to 70 per cent, it was estimated. This, along with other improved facilities, will account for the recovery of approximately 20,000 gal. daily of additional liquid products, the company stated.

Delta Engineering Corp., Houston, are the contractors for the project, which is under the supervision of Z. P. Armstrong, Magnolia's district superintendent at Kilgore.

Additional refrigeration capacity is being installed at the plant, which along with other changes, will leave the resultant processing facilities essentially that of a refrigeration-compression plant. An engine generator plant is also being constructed which will allow the auxiliary facilities to be electrically driven.

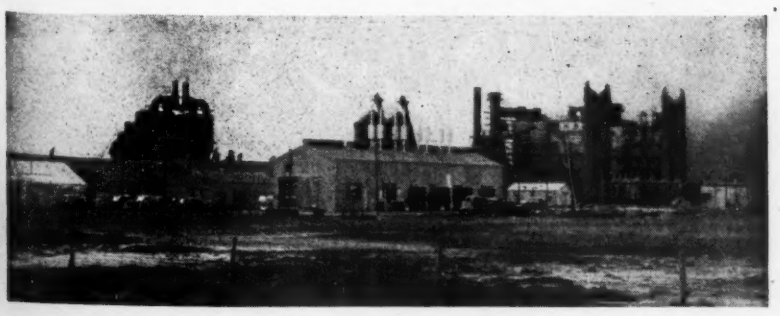
Weather Slows Completion Of Stano Plant in Kansas

Initial operations of Stanolind Oil & Gas Co.'s Stano gasoline plant near Ulysses, Kans., could begin February 1 if weather permits the work schedule to proceed normally, company engineers reported.

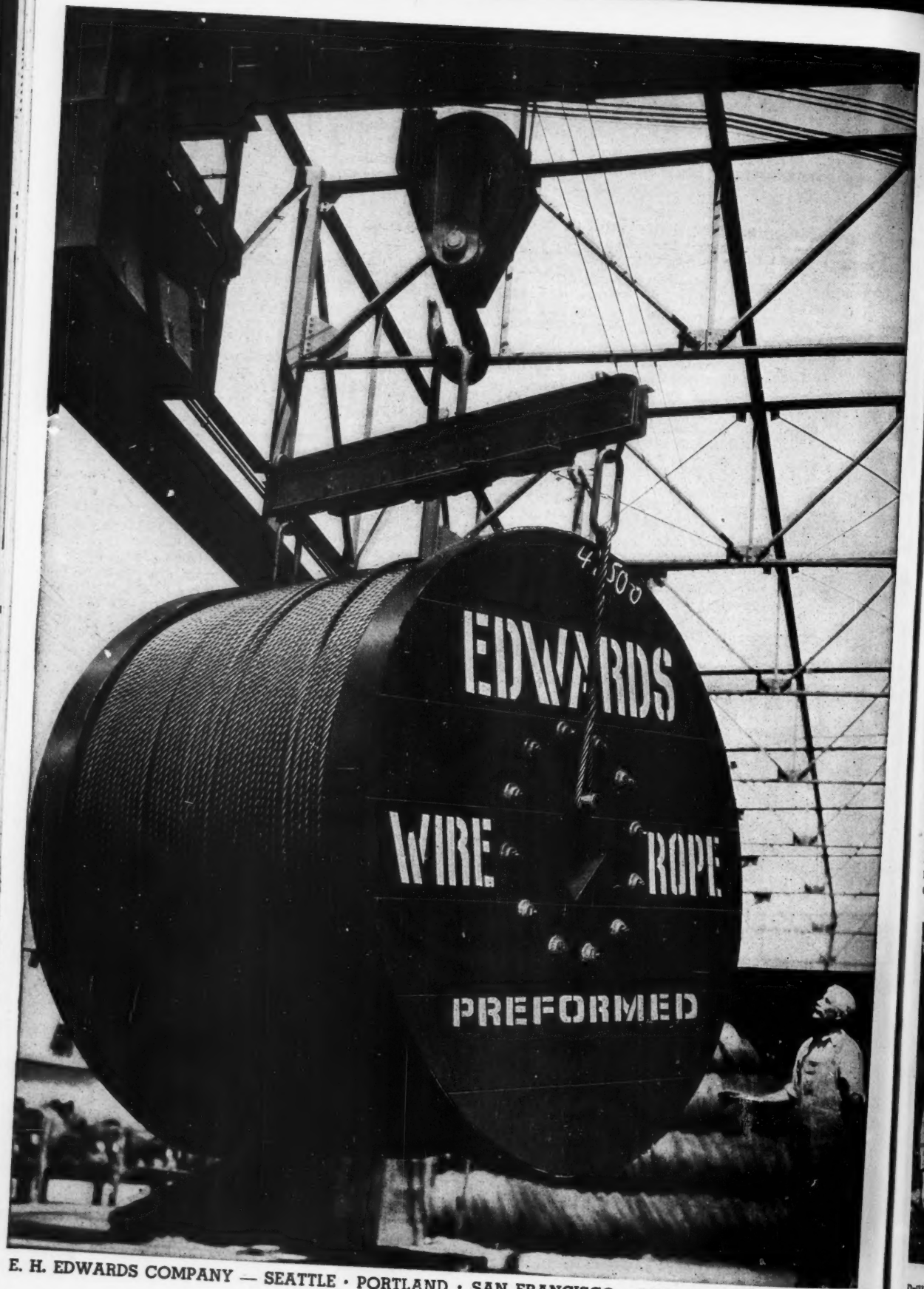
The plant, located in Grant County in the southwest corner of Kansas, has been in the path of recent blizzards which have delayed construction work. Final completion of the facilities is scheduled for about April 1, barring unfavorable weather conditions.

The Stano plant is located 7 miles west and 1 mile south of Ulysses, Kans. It is designed to operate at a daily capacity of 100,000,000 cu. ft. of gas daily or an output of 26,700 gal. of natural gasoline and 36,000 gal. of liquefied petroleum gas each day. Jones & Laughlin Supply Co. has the contract.

No compressors have yet been installed and the plant will operate for a time on the wellhead pressure of the gas which is estimated at about 350 psi. Already connected to the plant are about 150 wells, and eventually more than 300 wells are expected to be used as a source of supply.



An over-all view of United Carbon Co.'s carbon-black plant near Rockport, Aransas County, Texas. Capacity will be approximately doubled when new expansion program is completed early this year



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Among the

Drilling Contractors

A.A.O.D.C. Annual Meeting Scheduled for October

American Association of Oilwell Drilling Contractors will hold their ninth annual meeting in Dallas, Tex., in October, Joseph S. Morris, association president, has announced. Dallas was chosen by directors during a quarterly meeting held in Dallas January 18. Directors of the association will hold their next quarterly meeting in San Antonio April 5.

C. J. Paine, chairman of the association's educational and administrative committee, told directors that 15 conference centers had over-subscribed the minimum of 20 enrollees for the series of management institutes the association is sponsoring, with an average of 27 in each.

Plans for courses in the operation and maintenance of engines and an employment unit plan enabling contractors to offer their supervisory personnel a training service on management problems were discussed by John Woodruff, coordinator of Petroleum training, University of Texas. Contractual liability was also discussed by the directors, but no action was taken.

Plans for the fourth annual drilling industry safety clinic, scheduled in Dallas May 24-25, were made at a meeting of the insurance and safety committee January 17.

Trinity Drilling Co. has contract for Republic Natural Gas Co. 1-D Barnett, 660 ft. from south and west lines, SW ¼ Section 39, Block Y, TCRR Survey, outpost to Benedum field in east-central Upton County, Texas. This will be a 12,000-ft. test.

Peel Drilling Co. and Irv Hardman have location for their 1 Stuart, NE NE SE 1-6s-27w, 1 mile east of the Adell pool in Sheridan County, Kansas.

C. H. Hilburn has contract for Michel T. Halbouty 1 Will Hill, NW SW NE 7-22n-13w, 4 miles west of Plain Dealing, a 4,000-ft. test in Bossier Parish, Louisiana.

George & Wrather Drilling Co. has been dissolved, some of the company's rigs being sold to Fred Wimbly, Tyler, Tex., who will become an independent operator. Talbert George will take over operations in Illinois and Indiana, with part of the rigs, and John Wrather will operate in the Mid-Continent area with the remainder.

Brunson Drilling Co. is drilling its 1 Weigel, NE NE SE 2-12s-19w, 3 miles southwest of the Riverview pool in Ellis County, Kansas.

Sun Drilling Co. has staked location for its 1 Ralls, NE SW NE 16-1s-

Drilling crew of Goldsmith & Perkins at Skelly J-9 Frensley, Velma, Okla. Jack Bethany, Frank Borden, Ralph Beeson, and A. E. Bower, driller

PENBERTHY

"REFLEX"

WATER GAGE SET

For oil field, locomotive type and marine boilers. Water shows black — steam shows white; the water level is unmistakable. U-Bolt construction is strongest and simplest to service. Glass replaced by simply removing nuts on face of gage . . . unnecessary to work between gage and boiler. Conforms with A.S.M.E., Federal and State requirements when used for pressures specified by their respective codes.

This is one of the complete line of Penberthy gages that meet every liquid level gage requirement.

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USE 'BESTOLIFE IT'S BETTER

'BESTOLIFE—the Lead Seal Joint Compound used successfully in the Drilling and Refining Industries for years — is immediately available through more than 100 distributors in the U.S.A.

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See discussion of thread compounds, page 3 this issue.

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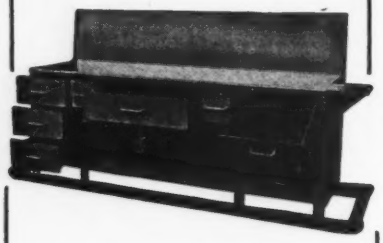
LOWER YOUR COSTS



OWEN TYPE "A" WORK BENCHES protect tools and instruments against loss and damage and save valuable time by keeping the tools most often used within quick, easy reach when needed.

Equip your rigs with these all-steel, all-welded, weather-proof benches and watch your tool loss drop and your crew efficiency increase. Full particulars will be furnished upon request.

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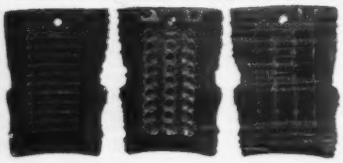
CASING SPIDER — AND ELEVATOR SEGMENTS WITH 'VARCO' BUTTONS



"Varco" buttons, popular for years in rotary drill pipe slips, proved satisfactory and have been adopted and are installed in segments of automatic casing spiders and elevators of various makes. Wickers are removed and holes bored for a maximum number of VARCO casing buttons, to assure uniform and maximum gripping area. Converting buttons for the next smaller casing are available. Write for complete descriptive data.

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Export: 617 So. Olive St.,
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3w, and its 2 Ralls, SE SW NE 16-1s-3w, 3,000-ft. tests in the Tatums pool, Carter County, Oklahoma.

Western Drilling Co. has contract for Sun Oil Co. et al 1 Mark Pulliam, SE corner, Section 8, H. M. Wells Survey, 5 miles west of San Angelo, in Tom Green County, Texas.

Fred Cox will drill The Texas Co. 1 McDonald, in SE of J. E. Smith Survey-A-673, 5 miles northeast of Bowie, in Montague County, Texas.

W. C. Patton will drill Berry & Arrington 1 Pitts, NW NW NW 31-19n-4e, a 3,900-ft. test in Payne County, Oklahoma.

Northern Development Co. has contract for North-Continental 1, LSD 7, 4-56-20w4, situated about a mile northeast of Bruderheim town and 8 miles southeast of Imperial-Redwater 3.

A. Leon Derby, Jr., of Derby Drilling Co., Wichita, Kans., was elected president of the Kansas Independent Oil and Gas Association at the eleventh annual meeting of that organization held recently in Wichita. Other officers elected are R. L. Williams of Wichita, vice president; A. W. Ault of McPherson, vice president; Pierce Musbroger of Wichita, secretary; and R. J. Harwood, treasurer.

Donnell Drilling Co. has contract for General American Oil Co. 4 A. F. Byrd, 660 ft. from north and 1,340 ft. from east lines of Section 17, Block K, TTRR Survey, 2 miles northeast of Petersburg in the Arick area of Hale County, Texas.

Commonwealth Drilling Co. will drill Imperial-Leduc No. 154, LSD 4-50-26w4, ¼ mile south of the main producing field, and Imperial Leduc No. 147, LSD 8, 20-50-26w4.

Woods Drilling Co. will drill its 1 Moore, C NE NE, 12-16n-3e, south of West Agra pool, in Lincoln County, Oklahoma.

Foster Drilling Co. et al will start 2 Deacon, NW NW SE, 25-17n-5e, between the North Agra and West Shamrock districts in Lincoln County, Oklahoma.

Conway Drilling Co. has contract for L. G. Yarbrough & Son et al 1 Addie Fletcher, SE of Section 448, Block 1-A, H&TC Survey, 1½ miles west of Bronte field, in Coke County, Texas. Contract depth is 6,000 ft.

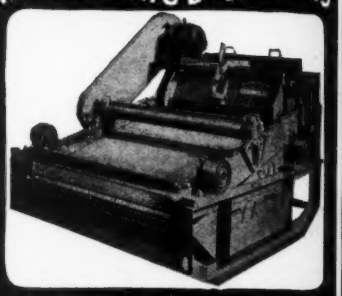
Can-Tex Drilling Co. has contract for Imperial-Leduc No. 137, LSD 5, 35-50-26w4, and Imperial-Leduc 161, LSD 11, 22-50-26w4.

Lewis Drilling Co. is drilling its 2 Robbing, SE NW SW 8-19s-9w, in Rice County, Kansas.

Callahan Drilling Co. will drill its 2 A. F. Werner, SE NE SW, 34-1s-8w, in Stephens County, Oklahoma. Scheduled depth is 2,850 ft.

Blount Drilling Co. will drill its 3 C. W. F. Scarborough, 990 ft. from south and 1,650 ft. from east lines of Section 2, Block C-22, PSL Survey, in North Scarborough field, Winkler County, Texas. Scheduled depth is 3,500 ft.

OVERSTROM
VIBRATING
ROTARY MUD SCREENS



OVERSTROM'S 4½'x 5' heavy duty mud screens have earned and won the acceptance of drilling operators throughout the world. The proven product of 25 years experience in designing vibrating screen equipment.

Also available in sizes 3'x 4' and 2'x 4' in single or dual units.

Write to Oil Equipment Division for bulletin MS-20-B or see Composite Catalog.

OVERSTROM & SONS
ENGINEERS AND MANUFACTURERS
2213 West Mission Road
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Standco
NO-SMOKE

STANDCO BRAKE LINING

Stands the gaff and gets the job done without scoring brake rims. See pages 3608-3613, Composite Catalog.

Standco Brake Lining Co.
HOUSTON

Baash-Ross News

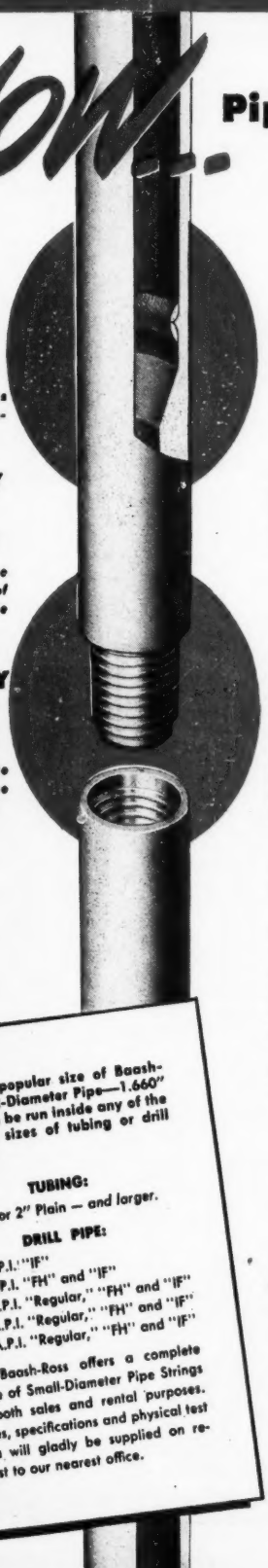
BAASH-ROSS TOOL COMPANY • LOS ANGELES • HOUSTON • OKLAHOMA CITY • NEW YORK

OUR 28th YEAR

NOW—

Pipe strings specially designed for today's deep-well cutting, clean out and other small-pipe operations . . .

Baash-Ross *High Strength* Small-Diameter PIPE STRINGS!



FLASH WELDED JOINTS
eliminate weaknesses of ordinary joint-to-pipe connections!

UNUSUALLY HIGH STRENGTH
as much as 3 times the tensile and torque of other strings with the same diameter!

EXTERNALLY FLUSH DIAMETER
insures free passage through other pipe without hanging up!

To match the deep well performance of Baash-Ross Cutting and Fishing Tools and Baash-Ross Power Swivels, Baash-Ross can now supply you with a new type of small-diameter pipe strings which feature unusually high strength factors—*both in tensile and torque!*

THE HIGH OVERALL STRENGTH IS ACHIEVED THROUGH THESE IMPORTANT FACTORS . . .

1 HIGH STRENGTH PIPE:
The pipe itself is made from chrome-molybdenum alloy steel tubing that is cold-drawn and normalized to provide very high strength-to-weight ratios in the pipe sections themselves.

2 HEAT-TREATED TOOL JOINTS:
The tool joints are also made from alloy steel that is specially heat-treated to combine wear-resisting hardness with shock-resisting toughness and strength. The tool joints are internally upset to provide ample metal for the threads, and the thread pattern has been carefully engineered to combine high strength with easy make-up.

3 FLASH WELDED CONSTRUCTION:
The final step to insure all-around high strength is the unique method by which the pipe is joined to the tool joints. A specially-developed flash-weld process is used that not only joins the tool joints *directly* to the pipe (eliminating any threads or other weak points between pipe and joints) *but provides a weld section that is actually stronger than the pipe itself!*

RESULT—a small diameter, light weight pipe string with unusually high strength properties . . . minimum tensile, 100,000 lbs./sq. in.—minimum torque, 47,500 lbs./sq. in!

Completely Flush Outside Diameter In addition to small diameter, low weight, and unusually high strength, Baash-Ross Small-Diameter Pipe Strings also feature a completely flush outside surface with no bulges or increased diameters to hang up or cause difficulties when working inside of other pipe strings. Note that there are no external beads or projections of any kind at the welded joint—and the tool joints are of the same outside diameter as the pipe—thus assuring an absolutely flush surface at all points.

Accessory Equipment To insure maximum adaptability and convenience in using Baash-Ross Small-Diameter Pipe Strings, the following accessory equipment is also available . . .

ELEVATOR PLUGS
These plugs are inserted into the top joint of the Small-Diameter Pipe String to provide a convenient elevator shoulder for supporting the string and handling the flush pipe sections. Made of heat-treated and hardened alloy steel, these Plugs are available with male thread only.

STABILIZER SUBS
Operators use these between the joints of Small-Diameter Pipe Strings to provide stabilizing shoulders that reduce friction on long cutting strings when working inside of internal flush pipe. (When working inside internal upset pipe, the upsets themselves provide stabilization and no stabilizing Subs are used.) These Subs are made of heat-treated and hardened alloy steel—and are sufficiently larger in diameter than the pipe to provide an elevator shoulder for supporting and handling the string. They are removed only when the pipe is used inside of other strings where clearance restricts the use of Stabilizer Subs.

Wide Adaptability Baash-Ross Small-Diameter Pipe Strings are unusually adaptable to virtually any small-pipe operation—for operating cutting strings, rotating small bits, clean-out tools, etc. . . . and they are the ideal pipe string to use with the popular Baash-Ross Power Swivel, which more and more operators are adapting to a wide variety of light rotating operations.

The Strings are externally flush, so can be run with complete safety inside all types of pipe—even internal upset pipe. They are available in a full range of sizes, but the most popular size is 1.660" in outside diameter. This size has the greatest range of adaptability since it can be run inside of any of the sizes of tubing or drill pipe indicated in the panel at left. ***Write for full details!***

The most popular size of Baash-Ross Small-Diameter Pipe—1.660" O.D.—can be run inside any of the following sizes of tubing or drill pipe . . .

TUBING:

2" E. U. or 2" Plain — and larger.

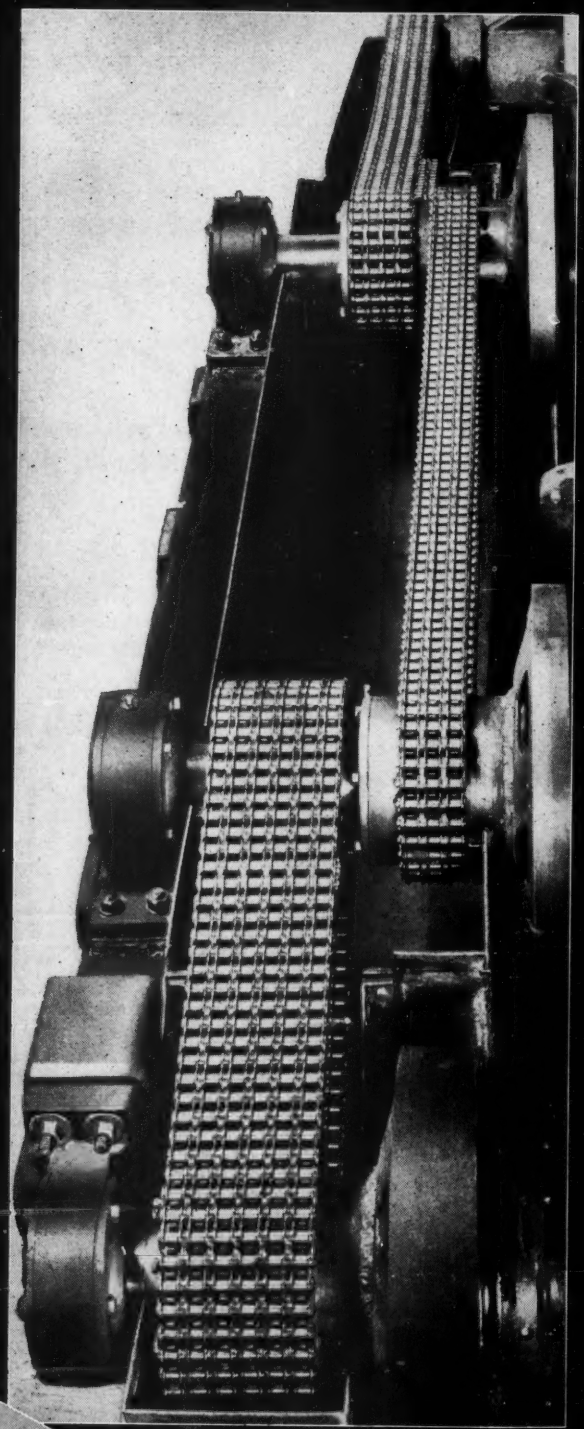
DRILL PIPE:

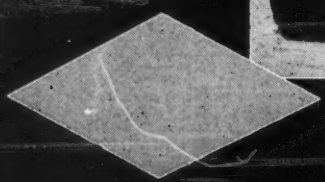
2⅜" A.P.I. "IF"
3½" A.P.I. "FH" and "IF"
4½" A.P.I. "Regular," "FH" and "IF"
5½" A.P.I. "Regular," "FH" and "IF"
6⅝" A.P.I. "Regular," "FH" and "IF"

Baash-Ross offers a complete range of Small-Diameter Pipe Strings for both sales and rental purposes. Prices, specifications and physical test data will gladly be supplied on request to our nearest office.

DIAMOND COMPOUND and PUMP Countershaft DRIVES

That Make Oil Country Production Records





DIAMOND ROLLER CHAIN DRIVES

Diamond Chain Company, Inc. *Indianapolis 7, Indiana*

Exploration and Drilling

Exploration, Organization and Administration

IMITATION is said to be the sincerest form of flattery. If this be true, then the exploration branch of the petroleum industry should feel highly complimented by some of the suggestions now being made to the government officials of the British Empire.

The general plan of organization and the coordinated administration used by the exploration departments of most of the larger oil companies in attacking problems of oil exploration is held up as a model to which the officials of the British Empire might well look in seeking to build a scientific attack on urgent practical problems in earth sciences.

The problem facing the empire is no mere matter of government contribution to science. It is a vital part of the life and death struggle to rebuild Britain's national wealth and restore its position as a great power. The nation faces the necessity, as a matter of national survival, of searching the British Isles for new natural resources, improving and modernizing the local natural resources now being developed and produced.

In addition, the home government and the colonial administrations, as well as the governments of the dominions, must survey their possessions for natural resources, undeveloped as well as developed, and attempt to get a broad-scale development of new wealth started quickly. Natural resources of the colonies in Africa will come in for particular attention.

Oil men are sometimes prone to forget that petroleum is only one phase of the science of geology. In the broad sense, geology is the science that is devoted to a study of the earth. Therefore, the type of organization and coordinated administration that brings success in the application to petroleum geological problems should work pretty much the same in most other types of geological problems.

The features of oil-exploration work that are held up as models are the gradual outgrowth of progress, mostly since the end of World War 1. The main principles are: (1) central coordination of all activities; (2) integration of related activities; (3) the flexibility which permits shifting of men and equipment from one problem to another, or from one geographic area to another.

Modern oil-exploration departments use surface geologists, subsurface geologists, paleontologists, stratigraphers, sedimentologists, and tectonic experts; geophysicists dealing with gravity, seismology, and magnetics; electric or radioactive logging; and aerial photogeological tools.

There are specialists by subjects; there are specialists by areas. Within both of these classifications, there are apt to be men who specialize in studying details, and other men who tend to specialize in dealing with broad pictures.

In addition to the above, there is an increasing tendency to build up special research departments. Some of the research is directed at immediate technical requirements, or local geological problems that are puzzling. But more and more of it is long term, and broad in scope; sometimes being extremely difficult to segregate from pure fundamental research.

Yet this seemingly long list of specialized talent is coordinated effectively and administered economically to get practical commercial results. Considering the area of the world covered, the number and scope of the commercial problems involved, the size of the staffs is small. This is the result of mobility and flexibility in the coordination. First problems can be attacked first by mobilizing whatever talent is considered necessary for an integrated attack. Be it new problems in old areas, or old problems in new areas, or something new in a new area, the coordination and administration are equal to the task.

HIGHLIGHTS OF WEEK'S DEVELOPMENTS

ROCKY MOUNTAIN AREA.—Shell Oil Co., Inc., recovered slightly oil-stained cores at their Clear Creek wildcat, Sheridan County, Wyoming, and is making drill-stem tests. On drill-stem tests in the base of the Phosphoria at the Riverton, Wyoming, wildcat, Atlantic Refining Co. recovered only a small show of oil and the operator is drilling ahead for a test of the Tensleep. Superior Oil Co. has established a new Rocky Mountain depth record at the Pacific Creek test in Wyoming. The well is now below 14,586 ft.

ALABAMA.—Humble Oil & Refining Co. 2 J. R. Williams, C SE NW 21-6n-4w, Washington County, is coring below 15,536 ft. with no shows reported. This is the deepest test in the history of the state's drilling operations.

TEXAS GULF COAST.—Superior Oil Co. 3 South Texas Development, deep exploration test in Lake Creek field, Montgomery County, has been drilled and cored to a total depth of 15,154 ft. in the Wilcox formation. While coring at this depth, operators encountered some difficulty, the mud began thinning out and operators pulled up to around 9,600 ft. to circulate and increase the mud weight. Circulation was regained and started back to bottom, and the well began flowing over the top, making gas and distillate-cut mud. Operators are conditioning and circulating in an effort to resume coring operations. This test was originally scheduled to test sands around 14,000 ft., but it is indefinite as to how deep the hole will be carried.

PERMIAN BASIN.—Tex Harvey Oil Co. 1 Floyd, Midland County test that was dry in the Ellenburger, yielded 162 bbl. of oil from the lower Permian. New activity around the Dermott field, Scurry County, is reported with locations made for east outposts. On the west flank, Lone Star 1 Maule recovered heavily oil and gas-cut mud on a drill-stem test at 5,594-5,610 ft., then drilled ahead. The second well for the Crossroads Devonian field, Lea County, New Mexico, completed flowing 328 bbl. on 24-hour potential. Location is an east offset to the discovery.

KANSAS

Butler County Wildcat Has Mississippian Show

REX & MORRIS have a prospective Mississippian well at 1 Parsley, NW SE SE 3-26s-3e, Butler County, in the area about 1¼ miles west of Allen pool. The well is reported to have had a 1,500-ft. fillup in 2 hours. Top of the Mississippian was called at 2,695 ft. and hole drilled to 2,704 ft. The same operator has staked a south offset at 2 Parsley.

Stafford County has another prospective discovery well at Crown Oil Co. 1 *Williams*, SW SW SW 32-23s-13w, about 1½ miles southeast of St. Johns Townsite pool. The well topped the Lansing at 3,540 ft. and was drilled to a total depth of 3,679 ft. Casing was set at 3,669 ft. and well is *reported* to have flowed 200 bbl. of oil in 8 hours after 1,000-gal. acid treatment.

Flynn Oil Co. is preparing to run drill-stem test on the Simpson at 1 Humphrey, NW NW NW 13-34s-13w, Barber County, south of Medicine Lodge gas pool. The well had a gas show on drill-*stem test* of the Mississippian.

In Rooks County, Petroleum, Inc., has completed 1 Ruzicka, NW NW SW 17-9s-18w, with a potential of 50 bbl. per day from the Arbuckle at 3,614-19 ft. The well is southwest of McHale pool.

In the area little less than 1 mile north of Berland pool in Rooks County, Birmingham & Bartlett 1 Marcotte, SE SW NW 18-10s-19w, had a recovery of 3,383 ft. of oil in 10 minutes on a drill-stem test of the Lansing-Kansas City at 3,493-3,528 ft. The well will be drilled to the Arbuckle to check the producing zone of Berland pool.

Carter Oil Co. has announced location for 1 Konch-Ransom SW NE SE 28-2s-14e, Nemaha County. The new location is 1¼ miles southeast of Carter's discovery well 1 *Strahm*, completed last October as a Hunton lime discovery well.

For the week, a total of 59 new locations were announced with Butler and Rooks counties tying for first place with seven new spots each, followed by Barton *with* six and Rooks with five.

KANSAS SUCCESSFUL WILDCAT

Barton County: Bay Petroleum Co. 1 Shartz, SW SW SE 7-20s-12w, pumped 302 bbl. of oil per day from Lansing at 3,230-34 ft.; anhydrite 660 ft., Topeka 2,850 ft., Lansing 3,172 ft., conglomerate 3,410 ft., Simpson 3,421 ft., Arbuckle 3,423 ft., TD 3,433 ft.

KANSAS WILDCAT FAILURES

Barton County: Derby Oil Co. and Peel 1 Robbins, NE NW NE 8-18s-13w, dry, TD 3,333 ft., Heebner 2,998 ft., Lansing 3,093 ft., Arbuckle 3,322 ft.

Ellis County: The Texas Co. 1 Erbert, NE NE SW 29-12s-20w, dry, TD 3,961 ft., anhydrite 1,550 ft., Topeka 3,234 ft., Heebner 3,470 ft., Lansing 3,506 ft., conglomerate 3,835 ft., Arbuckle 3,904 ft.

Great Lakes Carbon Co. 1 Kuhn, NW NW SW 8-14s-16w, dry, TD 3,508 ft., Topeka 2,912 ft., Heebner 3,168 ft., basal Kansas City 3,373 ft., Lansing 3,216 ft., Arbuckle 3,458 ft.

McPherson County: Bay Petroleum Co. 1 Banman, SE SE SW 24-20s-1w, dry, TD 3,468 ft., Mississippian 2,938 ft., Viola 3,421 ft., Simpson 3,458 ft.

Pawnee County: Continental Oil Co. et al 1 E. J. Warner, NE NE NW 25-21s-15w, dry, TD 3,886 ft., anhydrite 907 ft., Heebner 3,350 ft., Toronto 3,367 ft., Lansing 3,465 ft., basal Kansas City 3,679 ft., conglomerate 3,731 ft., Viola 3,757 ft., Simpson 3,804 ft., Arbuckle 3,851 ft.

Rooks County: Derby Oil Co. et al 1 Beherns, SE SE NE 25-7s-19w, dry, TD 3,350 ft., Topeka 2,795 ft., Heebner 3,001 ft., Lansing 3,027 ft., cherty conglomerate 3,320 ft., reworked Arbuckle 3,331 ft., solid Arbuckle 3,333 ft.

Pack et al 1 Campbell, SW SW SW 19-8s-19w, dry, TD 3,537 ft., Heebner 3,214 ft., Lansing 3,252 ft., conglomerate 3,512 ft., Arbuckle 3,516 ft.

Russell County: Westgate-Greenland Oil Co. 1 Angel, SE SE SE 3-11s-15w, dry, TD 3,484 ft., Heebner 2,962 ft., Lansing 3,007 ft., conglomerate 3,305 ft., Arbuckle 3,455 ft.

Stafford County: Anderson-Prichard Oil Corp. 1 Keenan, NE NE NW 24-21s-14w, dry, TD 3,722 ft., anhydrite 812 ft., Heebner 3,230 ft., Lansing 3,362 ft., conglomerate 3,614 ft., Simpson 3,646 ft., Arbuckle 3,693 ft.

OKLAHOMA

Garvin County Wildcat Hits in Hart Sand

IN the area south of Panther Creek pool and west of Southwest Antioch, Davon Oil Co. has found Hart sand production at 1 Lee Layton, SE SW SE 36-3n-3w, Garvin County. Well was carried to a total depth of 7,427 ft., topping the Hart at 7,308 ft. Casing was set to 7,400 ft. and perforated at 7,306-48 ft. Well was swabbed in and flowed to pits making gas estimated at 7,000,000 cu. ft. per day with an unreported amount of oil.

Also in the Panther Creek area, Phillips Petroleum Co. 1 Roller-Dockhorn, SE SE SW 25-3n-3w, flowed distillate on a drill-stem test of the Hart sand. Casing was set at 7,260 ft. and perforated at 7,200-18 ft. with test taken through perforations. The well had gas in 4 minutes and distillate in 20 minutes. The distillate flow was gaged at 8 bbl. for the first hour, 6.7 bbl. for the second, and 5.6 bbl. for the third.

Mazda Oil Corp. has a prospective Wilcox sand producer west of Fourdee pool in Noble County. The well, Mazda 1 Merriman, SE SE NW 26-22n-2w, flowed oil while drill pipe was being pulled after a test at 5,127-46 ft. Recovery was 360 ft. of oil, 900 ft. of oil and gas-cut mud, and a little salt water. The first Wilcox was called at 5,072 ft. and the second Wilcox at 5,130 ft. Casing has been set at 5,115 ft. Other production in Fourdee pool is Mississippian.

The question of the week in Noble County concerns the possibility that production in the narrow Ceres pool extends down to the west side of Fourdee pool. It was reported that Anderson-Prichard Oil Co. found gas and distillate in the Bartlesville at 4 Wattles, SE NW SW 24-22n-2w, even though the well was completed in the normal Mississippi pay of the pool. This well would be not too far off the extension of a straight line through the wells in the southwestern part of Ceres. At least one dry hole has been drilled near the straight line and between the pools, but if the Ceres pay does extend to the southwest and remains as narrow as it is within the pool, it could be easily missed.

OKLAHOMA SUCCESSFUL WILDCATS

Coal County: New pay in Centrahoma—Ideal Cement Co. 1 Riddle, C W/2 SW NE 27-2n-9e, flowed 215 bbl. of 58°-distillate per day from Cromwell at 4,975-5,117 ft., TD 5,200 ft.

Grady County: New pay in Knox—Pray 1 Mitchell, NW NE NW 34-3n-5w, pumped 64 bbl. of 34°-gravity oil per day from Permian sand at 2,555-85 ft., TD 5,516 ft.

Okfuskee County: New pay in Cary—Jergins 1 Krumme, SE SE NE 32-12n-10e, flowed 3 bbl. of oil per day through ¼-in. tubing choke from Booch 2,552-66 ft., TD 3,067 ft.

OKLAHOMA WILDCAT FAILURES

Blaine County: Signal 1 Pfaff, NW SE SE 8-19n-10w, dry, TD 3,875 ft., Herrington 2,508 ft., Winfield 2,545 ft., Ft. Riley 2,604 ft., basal Florence flint 2,475 ft., Cottonwood 3,082 ft., Foraker 3,375 ft.

Cotton County: West 1 Alexander, NW NW SW 31-4s-12w, dry, TD 1,614 ft., fusilinid lime 1,549-52 ft.

KEL CO

Safety

SPINNING LINE CATHEAD

The Model 16-LH Non-Fouling Cathead

THE OUTSTANDING CATHEAD OF TODAY AND TOMORROW

Anti-Fouling Catline Spool
Completely Housed Friction Cathead
Simplicity of Design, Operation and Maintenance
Double-Plate Clutch
Anti-Friction Bearings Throughout As Recommended by Leading Bearing Manufacturers
Choice of Mechanical, Hydraulic or Air Controls

AVAILABLE THROUGH YOUR FAVORITE SUPPLY STORE
Representatives in All Fields

KEL CO. **BEN F. KELLEY CO.**
TULSA, OKLAHOMA

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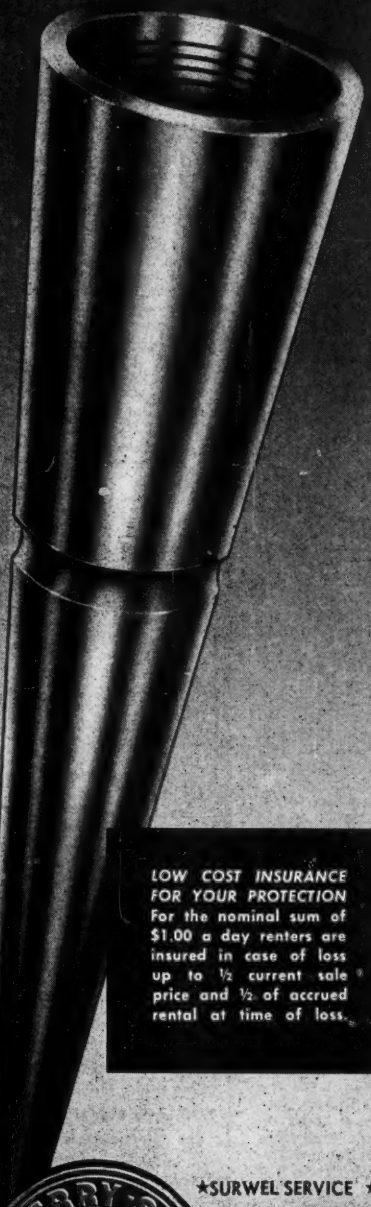
DIRECTIONAL SURVEYS

while you

DRILL

with S-S Non-Magnetic Drill Collar Rentals



Particularly advantageous in directional drilling the S-S NON-MAGNETIC DRILL COLLAR makes it possible to take directional single shot records *inside of the drill pipe.* It eliminates removing the drill pipe from the hole or raising the string off bottom to allow the surveying instrument to hang through a specially designed bit. You save rig time — You get more accurate records.

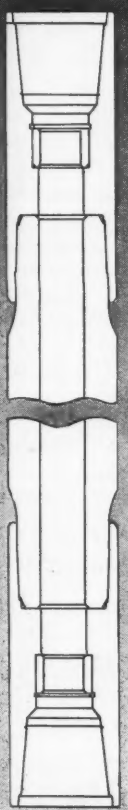
The S-S NON-MAGNETIC DRILL COLLAR is positioned immediately above the regular bit, the non-magnetic portion carrying the directional single shot instrument . . . *fully protected from loss and damage.*

Records are more accurate because the instrument is seated inside the drill collar in positive parallel to its walls.

The non-magnetic sections of S-S DRILL COLLARS are made of "K" Monel steel with the same high physical properties and strength found in conventional collars of steel.

S-S NON-MAGNETIC DRILL COLLARS are available on a low-cost daily rental basis in standard sizes from 4¾" x 14' to 7¾" x 23'.

Complete information and price list gladly furnished on request



Sectional view of S-S Non-Magnetic Drill Collar

LOW COST INSURANCE FOR YOUR PROTECTION
For the nominal sum of $1.00 a day renters are insured in case of loss up to ½ current sale price and ½ of accrued rental at time of loss.

★SURWEL SERVICE ★SYFO CLINOGRAPH ★E-C INCLINOMETER ★NON-MAGNETIC DRILL COLLAR

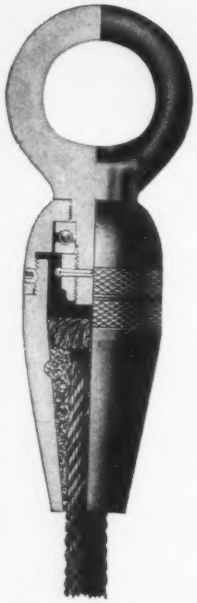
SPERRY-SUN

SPERRY-SUN WELL SURVEYING COMPANY

3118 BLODGETT AVENUE HOUSTON, TEXAS

Philadelphia, Pa. Falfurrias, Texas Odessa, Texas Marshall, Texas Long Beach, Calif. Oklahoma City, Okla. Lafayette, La. Bakersfield, Calif. Moulden Oil Field Services, Casper, Wyo.

ball bearing cat line SWIVEL



for wire line cat-lines. One end of the swivel is designed as a wire line socket for conventional babbiting of the line. The other end has a conventional ring for cordage rope. Many concerns babbit a swivel on each end of a 200' ½" or ⅝" wire line, and plait about 40' of manila rope in the ring for use with the cat head, proving to be much more economical than manila and greatly reducing the amount of cordage required for cat lines.

STYLE	Dia. of Ring	Wire Line Size	Weight	Breaking Strength, Pounds
105	1¼" I.D.	½" to ⅝"	4 lb. 2 oz.	28,000
106	1¾" I.D.	½" to ⅝"	5 lb.	39,000

L-K

PUMP VALVE CO.

P. O. BOX 901 • HOUSTON 1, TEXAS

PETROLEUM ENGINEERS

CABLE & STINE

WICHITA FALLS, TEXAS

EXPERIENCED PRACTICAL AND TECHNICAL CONSULTING PRODUCTION ENGINEERING SERVICE

SPECIALIZING in MODERN SECONDARY RECOVERY

Kay County: Midco 1 Graham, SE SE SE 21-27n-5e, dry, TD 3,151 ft., Burbank 3,016-71 ft., Cherokee 3,071-96 ft., Mississippi lime 3,096 ft.

Lincoln County: Creekmore 1 Sudheimer, SW SW SE 18-14n-3e, dry, TD 5,208 ft., Oswego 4,160 ft., Verdigris 4,280 ft., Skinner 4,390 ft., Red Fork 4,490 ft., Mississippi lime 4,760 ft., Woodford 4,812 ft., Hunton 4,888 ft., Sylvan 4,950 ft., Viola 5,052 ft., Wilcox 5,144 ft., second Wilcox 5,200 ft.

Burton 1 Anderson, NW NW SE 5-16n-3e, dry, TD 4,260 ft., Hogshooter 3,103 ft., Checkerboard 3,393 ft., Oswego 3,917-4,005 ft., Verdigris 4,044 ft., Skinner 4,055 ft., Red Fork 4,156-70 ft., Inola 4,190 ft., Bartlesville 4,198 ft., Bartlesville sand 4,213 ft.

Kingery 1 Allen, SE SE SW 32-16n-5e, dry, TD 3,590 ft., Hogshooter 2,440 ft., lower Layton 2,490 ft., Checkerboard 2,770 ft., conglomerate 2,770 ft., Oswego 3,460 ft., Prue 3,512 ft., Verdigris 3,580 ft.

Logan County: Fourdee 1 Woods "B," NE NE SW 28-17n-1e, dry, TD 5,209 ft.

Love County: Sinclair Prairie 1 Gardenhire, SW SW SW 5-9s-2e, dry, TD 7,250 ft., Arbuckle 7,148 ft.

Stephens County: Pat Drilling 1 Mann, SE NE SW 28-2s-6w, dry, TD 2,682 ft., sand 2,494-2,544 ft., Simpson shale 2,569 ft., Arbuckle 2,670 ft.

N. CENTRAL TEXAS

Wise County Operations Holding Current Interest

WICHITA FALLS.—Wise County exploratory and development operations held the light this week. Three miles southwest of Decatur, Cities Service Oil Co. 1 Ella T. McKissick, S. Isaacs Survey, cored sand with good fluorescence and oil odor from 4,789-97 ft. Operators prepared to run a drill-stem test of the section. Two miles south of Paradise, Mid-Continent Petroleum Corp. 1 M. S. McBride, W. Burke Survey, was drilling shale below 4,461 ft. Operators placed top of the Caddo lime at 4,095 ft. A drill-stem test of a sandy section from 4,141-52 ft., which had a show of oil in drilling, recovered 80 ft. of mud and no shows. Bottom-hole pressure was 1,490 psi. R. B. Thrift, Trustee, 1 W. O. Blocker, W. A. Gorman Survey, 6 miles west of Chico, was drilling below 2,170 ft.

In the southern part of West Chico area, Jones & Standard-Fryer Drilling Co., Inc., 4 Morris, W. Bohn Survey, showed gas in 3 minutes and recovered 900 ft. of oil, plus 90 ft. of oil-cut mud, on a 1-hour drill-stem test of the conglomerate from 5,470-95 ft. Drilling continued. In the same area, Bridwell Oil Co. 2 J. W. Berry, J. H. Hancock Survey, topped the Caddo at 5,085 ft., and continued drilling below 5,090 ft. It has had no shows reported.

Kingwood Oil Co. staked location for a test on the northwest flank of the West Chico field. It will be the 1-A S. H. Curtner, approximately 2,250 ft. from west and 2,900 ft. from south lines of the C. W. Egery Survey, and 1 location west of its 1 Curtner.

In Clay County, S. D. Johnson 1 Bertha Miller, Lot 5, Block 1, Clark & Plumb Survey, flowed an unestimated amount of oil and recovered 700 ft. of oil on a drill-stem test of the Caddo conglomerate from 5,380-91 ft. It is said to be a new pay level for the Johnson-Scaling field.

A large producer was in prospect for Shannon Caddo field of southern Clay County at Grace & Grace 1 McLaughlin, E. W. East Survey and ½ mile north of Shannon. The well flowed 284 bbl. of oil in 4 hours through 18/64-in. tubing choke, after 8,000-gal. acid treatment from 5,370-5,400 ft. Testing was to continue.

NORTH CENTRAL TEXAS (DISTRICTS 9 & 7-B) SUCCESSFUL WILDCAT

Young County: L. T. Burns 1 J. F. Larimore estate, Sec. 253, TE&L Sur., 1½ mi. SE True, pumped and flowed 282 bbl. oil, plus 15 bbl. water a day, Strawn sand 2,874-85 ft., TD 3,670 ft.

NORTH CENTRAL TEXAS (DISTRICTS 9 & 7-B) WILDCAT FAILURES

Archer County: E. P. Bowen 1 Mary Garvey, Blk. 54, Harris Subd., 6 mi. NW Archer City, dry, TD 1,510 ft., in shale.

Burkett & Strange 1 J. H. Turbeville, J. M. Armstrong Sur., 1 mi. S Archer City, dry, TD 1,300 ft., Gunsight lime 1,230 ft., sand with light show of oil, 1,240-50 ft.

G. E. Kadane & Sons 2 T. B. Wilson, W. Powell Sur., 2 mi. W Mankins, dry, TD 4,626 ft.

Brown County: J. E. Fitzpatrick 1 West Bros., J. C. Wafford Sur. 501, 4 mi. SW Grosvener, dry, TD 1,550 ft.

Coleman County: Star Oil Co. 1 T. N. Evans, Sec. 48, T&NO Sur., 7 mi. SE Coleman, dry, TD 2,202 ft.

Jack County: K. W. Mullegan 1 S. C. Roberts, Martha F. Small Sur., 5 mi. SE Antelope, dry, TD 503 ft.

J. S. Brown 1 Orb Coffman, Sec. 82, Blk. 45, H&TC Sur., ¼ mi. N Goree, dry, TD 1,742 ft.

Jones County: The Texas Co. 1 W. W. Mayfield, Sec. 2, D&DA Sur., 4 mi. SW Stamford, dry, TD 5,535 ft., Flippen lime 2,149 ft., Ellenburger 5,428 ft., elev. 1,568 ft.

West Central Drilling Co. 1 L. L. Huddleston, Sec. 47, Blk. 18, T&P Sur., 1 mi. W Noodle, dry, TD 2,495 ft.

Shackelford County: Great Expectations Oil Corp. 1 C. A. Nail, Sec. 126, Blk. 1, ETRR Sur., 15 mi. NW Albany, dry, TD 1,380 ft.

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Sec. 209, ETRR Sur., 3 mi. SE Leuders, dry, TD 1,650 ft.

Throckmorton County: Bridwell Oil Co. 1 F. B. Stribling, Sec. 648, TE&L Sur., 10 mi. SW Woodson, dry, TD 547 ft.

Taylor County: Star Oil Co. 1 W. L. Ray, Sec. 242, Blk. 64, H&TC Sur., 4½ mi. NW Shep, dry, TD 6,025 ft., Caddo 5,802 ft., Ellenburger 5,936 ft., elev. 2,387 ft.

Ungren & Frazier 1 D. O. Huddleston, Blk. 11, League 146, Grimes CSL, 3½ mi. SE Merkel, dry, TD 3,012 ft., Flippen 2,576 ft.

ROCKY MOUNTAIN

Sheridan County Test Has Staining in Lime

DENVER.—Staining in dolomites and limes, possibly in the base of the Minnelusa (Pennsylvanian) formation was found by Shell Oil Co. Inc., in the Clear Creek wildcat in the NW SE 11-57n-78w, Sheridan County, Wyoming. The well is now at 10,532 ft. and two drill-stem tests in the stained section failed. The operator is now running a third test on the well, but cores in the zone indicated that recovery would be low. It is probable the operator will drill the well deeper after the third drill-stem test attempt. Hunt Oil Co. has joined with Shell in this important wildcat, which is northwest of the Adon discovery in the north-central part of the Powder River basin. This well is of importance as the first of several deep tests projected on seismic highs in the area. Acreage has been blocked throughout the northern and western portions of this basin, and a great deal of seismic work has been accomplished in the area during the past year.

Atlantic Refining Co.'s wildcat at 1 Tribal, SW SE 25-1s-4e, in the Riverton area, Fremont County, Wyoming, made only a small amount of gas on drill-stem test in the base of the Phosphoria at 11,473-11,513 ft. The well topped the Phosphoria at 11,401 ft. and on test in the top of the formation the well flowed at the rate of 10,000,000 cu. ft. of gas daily with some distillate recovered. The operator is now drilling ahead for a test of the Tensleep formation. Oil was recovered in tests of the Tensleep at Stanolind Oil & Gas Co.'s present wildcat on the Beaver Creek structure, immediately south of the Atlantic Riverton block.

Stanolind is near abandonment at the important Spread Creek wildcat in the Jackson Hole area, Teton County, Wyoming, after crossing a fault and going from Sundance sands back into Mowry shales. The well is now in extremely steep dips and the operator is drilling below 7,445 ft. in the hope of reaching the second Dakota sand. The well, which is located in the NE SE SW 25-44n-113w, is located on a large surface structure which was unitized by Stanolind last year. Large blocks were assembled in the area by Stanolind, Sinclair, Carter and others. The well encountered the fault at around 6,400 ft. and redrilled Mowry shales, which were first logged at 3,800 ft.

Superior Oil Co. has established a new depth record at its Pacific Creek wildcat at 1 Unit, SW NE SW 27-27n-109w, Sweetwater County, Wyoming. The well is now below 14,586 ft., passing the record set last year by Pure Oil Co. at the West Poison Spider, Wyoming, 14,309-ft. producer. Superior's well has been carried as a tight hole, except for drilling depths, below 10,000 ft. However, it is unofficially reported that strong gas shows have been encountered in the well. The well may be drilled as deep as 16,000 ft. before completion.

WILDCAT SUCCESS IN WYOMING

Sheldon Dome, Fremont County: Kerr-McGee and Phillips 1 Arapahoe, NW NW 15-5n-2w (WRM), 7,594 ft. T.D., PB 7,068 ft., pmp. 54 bbl. oil, 7 bbl. water, 8½ hours through csg. perf. 6,794-6,798 ft., shot with 654 qt. SNG 7,068-6,807 ft. Dakota 4,100 ft., Morrison 4,348 ft., Sundance 4,615 ft., Nugget 5,092 ft., Jelm 5,155 ft., Dinwoody 6,364 ft., Phosphoria 6,454 ft., Tensleep 6,762 ft., basal Amsden 7,300 ft., Madison 7,390 ft.

WILDCAT FAILURES IN WYOMING

Riverside, Carbon County: W. R. Allphin 1 Peterson, NW NW NW 23-14n-83w, 2,210 ft. TD, abnd., granite 2,203 ft.

Tip Top, Sublett County: General Petroleum Corp. 81-7-G, NE NE NE 7-28n-113w, 10,692 ft. TD, susp. indef., DST 10,646-92 ft., 30 min., rec. 8,840 ft. water. First Frontier 6,600 ft., second Frontier 7,140 ft., Bear River 7,905 ft., third Bear River 8,406 ft., fourth Bear River 8,530 ft., Beckwith 8,666 ft., Twin Creek 9,540 ft., Nugget 10,550 ft.

COLORADO WILDCAT SUCCESS

Dove Creek, Montezuma County: Western Natural Gas Co. Byrd-Frost, Inc. et al 1 A. Driscoll, C N½ NE NW 3-38n-19w, 8,286 ft. TD, PB 5,950 ft., flowed avg. 20 bbl. oil per hr., with 5,000,000 cu. ft. gas daily through ¼-in. choke. Csg. perf. 5,910-34 ft. with 96 holes, acidized 7,500 gal. Shinarump 2,320 ft., Moenkopi 2,412 ft., Rico 4,300 ft., Hermosa 4,492 ft., Parados 5,590 ft., gas zone 5,920-34 ft., Molas 8,010 ft., Mississippi 8,143 ft.

NORTHERN NEW MEXICO WILDCAT FAILURE

Northeast Farmington, San Juan County: Byrd-Frost, Western Natural Gas 1 Mattox, SE NW NW 24-30n-13w, 2,090 ft. TD, abnd., Pictured Cliff 1,933 ft.

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EASTERN TEXAS

Humble Continues Testing Freestone County Well

DALLAS.—Humble Oil & Refining Co. continued testing the lower half of the Pettit formation at its R. P. McWatters, Freestone County deep test, which was plugged back to 8,420 ft. An acid treatment of 10,000 gal. was made through casing perforations at 8,315-8,400 ft., the formation breaking down under 1,200 psi. Following the treatment, it was allowed to clean into pits. A ½-in. choke was installed and pressure dropped from 1,300 psi. to 900 psi. during a test period from noon until midnight, with the well making gas and a slight amount of distillate.

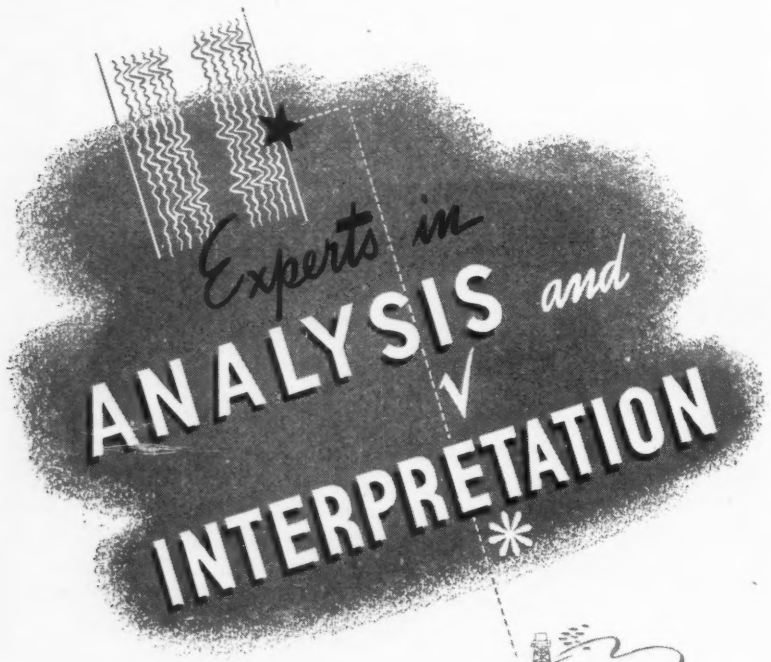
In Henderson County, Stanolind Oil & Gas Co. 1 Deupree, 5½ miles southeast of Athens, drilled out cement to 10,335 ft., and prepared to recement the 5½-in. drill pipe which was used for casing.

Gulf Oil Corp. 1 John Veach, Bowie County test in the Jacob McFarland Survey, was drilling ahead below 5,924 ft. in shale and sandstone. A 30-minute drill-stem test from 5,860-5,901 ft. recovered water cushion and 25 ft. of drilling mud with no shows.

EAST TEXAS (DISTRICTS 5 & 6)
WILDCAT FAILURES

Hopkins County: A. O. Phillips 1 D. Logsdon, J. M. Spencer Sur., A-933, 9 mi. NE Sulphur Springs, dry, TD 5,010 ft., Woodbine 3,385 ft., Comanche 3,955 ft., Paluxy 4,830 ft., elev. 500 ft.

Limestone County: Solomon Wolf 1 Anna Focke, Pedro Varela Sur., 5 mi. SW Mexia, dry, TD 3,311 ft.



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TEXAS GULF COAST

New Oil-Producing Area For Gulf Coast Opened

HOUSTON.—A new oil-producing area for the Texas Gulf Coast has been opened in Newton County by Texas Gulf Producing Co. and Rowan Drilling Co. 1 Morgan, et al, located in W. B. Ellis Survey, approximately ¼ mile west of Hartburg, and 6½ miles east of Gist production. On test through open hole 7,556-60 ft., the well flowed an estimated 8 to 10 bbl. of 41.8°-gravity oil per hour. Gas-oil ratio estimated to be 1,600, bottom-hole pressure, flow being 3,750 psi., and bottom-hole pressure, shut in, at 4,000 psi. Operators are preparing to make a potential flow test. Total depth is 8,011 ft., plugged back depth 7,560 ft.

First oil production for the Luling sand in Albert West field, Live Oak County, has been opened by Continental Oil Co. B-2 Albert West which has been reworked and completed through perforations at 6,942-44 ft., for 78.5 bbl. of oil per day through ⅞-in. choke, with 22 per cent water in the flow, 150 psi. tubing pressure, casing sealed, gas-oil ratio 930, and gravity of the oil 38°. Original completion was through perforations at 6,923-25 ft., for gas-condensate production. This well is located in James Warmsley Survey, A-481.

In Goliad County, 1½ miles northwest of Charco, W. L. Goldston 1 Willbern, wildcat discovery has been completed for a gas-condensate well through perforations at 8,660-72 ft., estimated approximately 18,000,000 cu. ft. of gas per day on open flow, with shut-in pressure of 3,425 psi. The well showed 2,600 psi. working pressure while flowing on a ¼-in. choke. Total depth is 9,101 ft., with 5½-in. casing set to 8,819 ft. Well is located in Victor Blanco grant A-7, 1 mile southeast of the Karnes-Goliad county line.

Humble Oil & Refining Co. 1-A Blanche Finley, a deep test on the south flank of Hardin field, Liberty County, has been completed in a new pay topped at 7,790 ft. Test was drilled to a depth of 11,663 ft., and plugged back to 7,804 ft. for the completion. On initial production test the well flowed 46 bbl. of 38.8°-gravity oil per day with gas-oil ratio of 18,200, through perforations at 7,790-7,800 ft. Flowing pressure on the tubing was 2,250 psi. while on ⅛-in. choke.

TEXAS GULF COAST (DISTRICTS 2 & 3)
SUCCESSFUL WILDCATS

Calhoun County: New gas pool—Quintana Petroleum Corp. 1 Louise Kubatt et al, in Block 4, in Y. Benavides grant, 7⅛ mi. W of Port Lavaca, top pay 8,760 ft., TD 9,310 ft., perf. 8,767-91 ft., IP: 29,000,000 cu. ft. gas per day on open flow. Comp. 11-15-48.

Victoria County: New gas-condensate discovery, West Mission Valley—Western Natural Gas Co. 1 M. E. Cooley et al, in Benj. J. White Sur. A-354, 7 mi. SW of Mission Valley or 7 mi. E-SE of Brandt field of Goliad County, top pay 8,895 ft., TD 9,082 ft., perf. 8,895-8,925 ft., IP: 2,500,000 cu. ft. gas per day through ¼-in. choke, gas-condensate ratio 50,000, shut-in pressure 3,500 psi. Comp. 1-4-49.

TEXAS GULF COAST (DISTRICTS 2 & 3)
WILDCAT FAILURES

Bee County: Bridwell Oil Co. 1-A Mattie Wood Est., in Sumpter Turner Sur., 1 mi. NE of NE extension well at South Blanconia field.

Brazoria County: Jack W. Frazier & Salt Dome Oil Corp. 1 Hoidale et al, in E. Little Sur., Block 9 of Divn. L, north of Manvel production, dry, TD 4,887 ft.

Calhoun County: Louis Crouch 1 Joe Brett, in Florentine Garcia Sur., 1½ mi. NE of East Long Mott field, dry, TD 7,562 ft.

Calhoun County: Quintana Petr. Corp. 1 Mildred Shofner, in Samuel Shupe Su., A-137, 1½ mi. SW of Port Lavaca, dry, TD 8,721 ft.

Goliad County: Stewart Pet. Co. 1 Swi-

cheimer Est., in Cuadrillo Irrig. Co., Sur. A-316, 6 mi. S of Fannin, near Fannin gas field, dry, TD 4,751 ft.

Jackson County: Blanco & Buchanan & Transwestern Royalty Co. 1 Pavel Skarpa, in J. Heard Sur., A-28, 5 mi. S of Ganado, dry, TD 7,540 ft.

H. L. Hunt 1 Della Larson, in Block 30, Roseborough Ranch subd., Valentin Garcia grant, A-24, 5 mi. W-NW of Vanderbilt, dry, TD 6,750 ft.

Jasper County: S. W. Richardson 1 M. B. Hughes et al, in Hy Webb Sur. A-42, 3½ mi. N of Bessmay, dry, TD 8,250 ft.

Jefferson County: W. J. Goldston et al 1 Louise & A. R. Fowler, Burr & Caswell Sur. 4, 5 mi. SW of Nome townsite, dry, TD 8,310 ft.

SOUTHWEST TEXAS

Mariposa Field Extended With New Pay Zone

CORPUS CHRISTI.—The Mariposa field of Brooks County has been extended 1¼ miles southeast by Arkansas Fuel Oil Co. 1 J. F. Dawson, which also opened a new pay zone. Completion was made through perforations at 7,780-90 ft. and on drill-stem test the well flowed at the rate of 76 bbl. of oil per day through ¼-in. and 5/32-in. chokes, with 440 psi. working pressure. Gas-oil ratio, 1,140 and gravity 41.7°. Total depth is 9,921 ft., with 5½-in. casing set on bottom. Well is located in J. F. Dawson Survey 154, A-178.

Shell Oil Co. 1-A Bain, prospective discovery well in the "Big-foot" area of Frio County, is reported completing on the pump through open hole at 3,211-87 ft. The 5½-in. casing was set to 3,211 ft., on top of the Navarro sand. Total depth is 3,287 ft. in the Navarro. This well is located 4 miles south of Bigfoot and 10 miles southeast of Moore, in John Bruggeman Survey 133.

Sullivan & Garnett 1 United North & South Development Co., located 2/3 mile northwest of oil production at Lamar field, in Aransas County, has been completed in a new, shallow pay zone for gas-condensate production. Drilled to a total depth of 7,275 ft., with 7-in. casing set on bottom, the well was completed through perforations at 7,024-35 ft., making an ungaged amount of gas and condensate through a 9/64-in. choke, with 900 psi. tubing pressure and 1,400 psi. casing pressure. This well is located in lot 123 of Lamar townsite.

The Atlantic Refining Co. 1 A. C. Gandy, extension well and new oil pay discovery approximately 1 mile southwest of previous oil production at North Minnie Bock field, Nueces County, gaged 13.8 bbl. of oil per day on open flow on potential test, with gas-oil ratio of 1,118. Production is through perforations at 7,006-12 ft. Total depth is 8,206 ft. with 5½-in. casing set to 7,083 ft. Well is in Section 54, George H. Paul's subdivision of Driscoll ranch.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) SUCCESSFUL WILDCAT

Brooks County: New gas pool—Humble Oil & Refining Co. 2 Robert J. Kleberg, Jr., Trustee, in Los Muertos Pasture, in La Noria de Tio Ayola Gt., 1½ mi. E of Boedeker gas field, 13 mi. S of Falfurrias, top pay 1,860 ft., TD 7,923 ft., perf. 1,860-70 ft., IP 2,200,000 cu. ft. gas per day on open flow (dry gas). Comp. 12-20-48.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) WILDCAT FAILURES

Duval County: The Hancock Oil Co. of Calif. 1 Clara Driscoll Est., in S&M Sur. 329, A-581, 1 mi. N of Strake field, dry, TD 3,810 ft.

Taggart-Weaver & Sharp 1 Albert Martin, Trustee, in GC&SF Sur. 172, dry, TD 3,073 ft.

Medina County: Humble Oil & Refining Co. 1 E. E. Wilson, AB&M Sur. 47, 6½ mi. SW of Yancey, dry, TD 7,168 ft.

Nueces County: Comanche Corp. 1 H. W.

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Isensee, in Geo. H. Paul subd., of Driscoll ranch, 2 mi. E of Robstown, dry, TD 7,652 ft.

H. R. Smith & W. C. McBride Inc. & Heep Oil Co. 1 Joe Stelzig, in Sec. 196, F. Z. Bishop subd. of Palo Alto Gt., 6 mi. NW of Bishop, 1½ mi. from nearest oil production on south flank of Agua Dulce field, dry, TD 6,680 ft.

San Patricio County: Plymouth Oil Co. 1 Z. D. Campbell, Sec. 65, Geo. H. Paul subd., 1½ mi. E of East White Point field, dry, TD. 7,007 ft.

Starr County: A. & T. Drilling Co. 1 Paula Salinas de Reynaga, Sur. 72, 20 mi. N of Roma, dry, TD 1,151 ft.

Cam Corp. D-1 M. Guerra Jr., et al, Sur. 199, 7 mi. NW of North Rincon field, dry, TD 5,600 ft.

Webb County: J. N. Abel & Weaver & Sharp 1 Lod Moglia Est., Sur. 672, 8 mi. N of Bruni, dry, TD 3,125 ft.

Williamson County: D. B. Scully 1 A. F. Matetzahk, in Thomas A. Moore Sur., 2½ mi. E. of Coupland, dry, TD 1,001 ft.

Zapata County: Bridwell Oil Co. A-4 Robert Hinnant, in Sur. 76, 15 mi. SE of Mirando City, and 1½ mi. SW of Mirando Valley field, dry, TD 1,708 ft.

MISSISSIPPI

Franklin County Gets Possible New Discovery

JACKSON.—Barnsdall Oil Co. 1 J. A. Pittman, 29-5n-4e, approximately 6 miles south and 3 miles east of Meadville, in Franklin County, is a possible new discovery for Mississippi. An electric log was run and tops picked as follows: lower Tuscaloosa 11,024 ft., sand 11,087-11,101 ft., sand 11,122-44 ft., Massive sand 11,228 ft., Lower Cretaceous 11,246 ft. A total of 32 sidewall samples were attempted from the lower Tuscaloosa sands. Fifteen of these were from the interval 11,087-11,100 ft. All of these were recovered and had good odor. Total depth is 11,308 ft. in Lower Cretaceous. Operators now are preparing to set casing to bottom of hole for testing.

The California Co. 1 Cranfield Unit 11, Tract 1, 44-7n-1w, in Cranfield field, Adams County, was completed flowing an initial choke, tubing pressure 1,600 psi., gas-oil ratio 1,004. Total depth is 10,337 ft., and production is through open hole. The 7-in. casing was set at 10,294 ft.

MISSISSIPPI WILDCAT FAILURES

Marion County: Honolulu Oil Corp. 1 Gaylord Container Corp., 31-5n-18w, dry, TD 11,504 ft., top Tuscaloosa 8,820 ft., Marine Tuscaloosa 9,477 ft., lower Tuscaloosa 9,801 ft., Lower Cretaceous 10,254 ft.

Pike County: Sells Petroleum Co. 1 Board of Supervisors, C SW NW 16-3n-9e, dry, TD 11,050 ft.. top Tuscaloosa 9,749 ft., Marine Tuscaloosa 10,190 ft., lower Tuscaloosa 10,561 ft., Massive 10,810 ft., Lower Cretaceous 10,950 ft.

Rankin County: Shell Oil Co., Inc. 1 C. R. Chatham et al, 10-5n-2e, dry, TD 4,100 ft.

FLORIDA WILDCAT FAILURE

Putnam County: Sun Oil Co. 1 H. E. Westbury et al, 37-11s-26e, dry, TD 3,892 ft.

CALIFORNIA

May Have Schist Pay In South Edison

LOS ANGELES.—The South Edison field in Kern County may soon have production from a new formation, the Fractured Schist, if results of formation tests at the Beloil 36-26-2 Lawson-Bennett, 26-30s-29e, are any indication. Two formation tests were made at this well and each is reported to have shown a rise of approximately 2,550 ft. of clean oil in the tester. Tests were conducted at the intervals 3,203-40 ft. and 3,203-80 ft., total depth, respectively. Casing has now been run and cemented at 3,200 ft.

The Lawson-Bennett well is approximately 1½ miles south of nearest established schist production in the Edison field, and about ½ mile southwest of a well which developed a production of 100 bbl. daily from the schist several months ago. Oil yield in this well, however, soon changed to water and efforts to shut off the water so far have been unsuccessful. Only schist production in the state at the current time is found in the Edison and Lawndale fields, the former being in the San Joaquin Valley region and the latter being in the Los Angeles basin.

Developments at Kettleman Hills reached an interesting stage when Standard Oil Co. of California cemented liner at 12,950 ft. in its deep Eocene test on the South Dome, 4-2 S. F. & F. L., 12-25s-19e. The well, bottomed at 12,954 ft., will test water shut-off above and below the Eocene before perforating for production trials.

The well is believed to have a good chance to develop Eocene production since this formation produces both at the North and Middle Domes.

CALIFORNIA SUCCESSFUL WILDCAT

Los Angeles County, Newhall area: Newhall Refining Co. 1 Philbert, 31-4n-15w, on gas lift produced 30 bbl. daily, gravity 15°, water cut 1 per cent, TD 1,400 ft.

CALIFORNIA WILDCAT FAILURES

Fresno County, Kerman area: Harry C. Long, Operator 51-27 Lowe, 27-14s-18e, dry, elev. unknown, TD 5,422 ft.

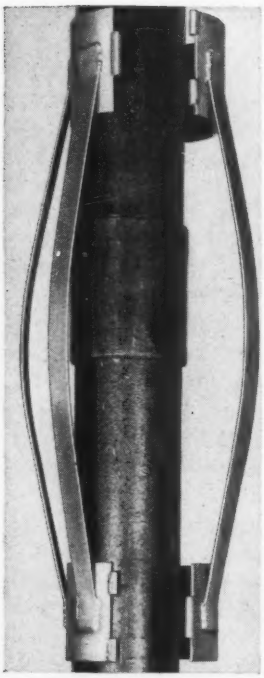
Kern County, Midway-Sunset area: General Petroleum Corp. 363 Sunset 2A, 2-11n-24w, dry, elev. 889 ft., TD 5,192 ft.

Poso Creek area: Golden Bear Oil Co. 32-1 Grimes A, 32-27s-27e, dry, elev. 686 ft., basement 6,740 ft., TD 6,772 ft.

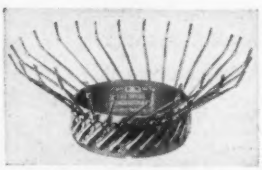
Premier area: Bender Oil Operations 3 Kelly, 20-28s-27e, dry, elev. 545 ft., Transition 3,505 ft., TD 3,525 ft.

Round Mountain area: E. A. Bender 1

Insure Better Cement Jobs *BEFORE* Cementing!



B and W Latch-On Centralizer



B and W Multi-Flex Scratcher

IT'S EASY TO KNOW ahead of time that you're going to get a better cement job... that you'll avoid need for squeeze cementing... that you'll have a more profitable well completion—*and at just a fraction of the cost of having a cementing failure on your hands!*

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Second—*Remove mud cake* with B and W Multi-Flex Scratchers installed on the casing through the desired cementing area. Strong multiple-wire fingers 5" long combine strength with reversibility... are flexible to adapt themselves to hole contour for minimum disturbance of the mud cake while running in... insure *complete mud removal* during cementing.

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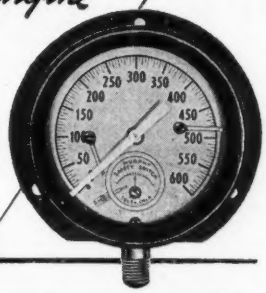

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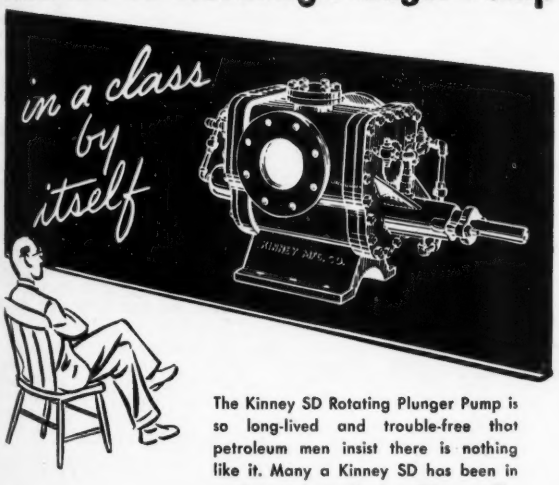
KINNEY SD Rotating Plunger Pump



The Kinney SD Rotating Plunger Pump is so long-lived and trouble-free that petroleum men insist there is nothing like it. Many a Kinney SD has been in continuous service for over 25 years. The rotating pump mechanism is unique in its simplicity—there are no valves, springs or gaskets and only one stuffing box. Displacement is positive and capacities range from a few gallons to over 3000 gallons per minute, handling all petroleum products from Diesel oil to heavy asphalt.

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KCL, 13-28s-28e, dry, elev. 1,085 ft., Vedder 2,508 ft., TD 2,538 ft.

Monterey County, San Ardo area: Barnsdall Oil Co. 1 Ansberry, 2-22s-9e, dry, elev. 810 ft., TD 1,463 ft.

Shell Oil Co., Inc., 1 D. G. & J. Unit, 19-22s-10e, dry, elev. 740 ft., TD 2,721 ft.

San Luis Obispo County, Cuyama Valley area: Southern Calif. Petroleum Co. 1 Joice, 24-11n-28w, dry, elev. 1,850 ft., TD 4,014 ft.

Santa Barbara County, Cuyama Valley area: Barnes & Shadrick Drilling Co. 1 Landry, 14-10n-28w, dry in brown shale, TD 3,108 ft.

General Petroleum Corp. 41-5 Patterson, 5-10n-28w, dry, elev. 2,400 ft., TD 4,921 ft.

Richfield Oil Corp. 1 Koch A, 19-11n-28w, dry, elev. 1,857 ft., TD 2,077 ft.

Richfield Oil Corp. 1 Harrington-U. S., 14-11n-28w, dry, elev. 2,522 ft., TD 3,680 ft.

Santa Rosa Island: Signal Oil & Gas et al 1 Telcolote, 13-2s-32w, dry, elev. 300 ft., TD 3,656 ft.

OHIO, KENTUCKY

Third Bethlehem Well Gets Good Show of Gas

COLUMBUS.—Belden Co. drilled in its third well in southeastern Bethlehem Township, Stark County, on Bruck Bros. in Section 22, ½ mile west of the discovery. Gas was in the White Clinton at 4,405-30 ft. and gaged 877,000 cu. ft. natural and 3,000,000 cu. ft. when shut in after shot.

Status Development Co. completed another well north of Sandyville, 1 S. E. Weaver, Section 3, Sandy Township, Tuscarawas County. White Clinton at 4,675-4,707 ft., made 1,056,000 cu. ft. natural and 1,225,000 cu. ft. when shut in after shot.

East Ohio Gas Co. drilled through the Clinton in wildcat on A. Almasy, Section 32. Osnaburg Township, Stark County. Stray sand at 4,871-86 ft. was dry, red sand at 4,886-4,928 ft. showed 53,000 cu. ft. gas, and the White at 4,940-65 ft. was hard and dry. The well is drilling now below 5,000 ft.

The new gas pool in western Litchfield Township, Medina County, was extended a location to the west by Ohio Fuel 1 Clyde Browand, Lot 5. Upper Clinton at 2,626-32 ft. gaged 2,110,000 cu. ft. natural. Three additional locations have been staked in the pool.

A wildcat location has been staked on Geo. Clemens, Lot 8, Linton Township, Coshocton County. The test will be drilled to the Oriskany by Ohio Fuel Gas Co.

Fourteen locations from nine counties were reported for the week, Muskingum having three, while Ashland, Licking, and Washington had two each. Completions totaled 28 with Ashland and Lancaster fields each having 6.

OHIO WILDCAT FAILURE

Geauga County, Chester Township: John Galey et al 1 L. Battles, Lot 26, Clinton 3,613-92 ft., TD 3,815 ft.

WESTERN KENTUCKY

OWENSBORO.—Sohio Petroleum Co. and Chester Oil Co. are pump testing the Benoist at 1 Shiver Heirs, SW SE NW 1-O-36, Henderson County, but no gages have been released. The well is slightly more than 1 mile southwest of Birk City pool and had good recovery of oil on a drill-stem test at 1,822-29 ft. Since several dry holes outline the southwest edge of Birk City pool, this well may open a new area near the Henderson-Daviess county line.

F. M. Ashby has completed another well in the Stanley area north of Griffiths pool in Daviess County. The well, 1 Joe Alvey, 5-P-28, was completed in the Palestine at 977-90 ft. with an initial production of 100 bbl. per day.

In the Guffie area of McLean County, Miller and Shiarella and Ashland Oil & the Jackson sand. The wells, 10 Wiggins

Refining Co. have completed two wells in and 11 Wiggins, 20-N-27, were completed for 90 bbl. and 90 bbl. per day respectively.

EASTERN KENTUCKY

ASHLAND. — In northwestern Johnson County, 19-R-79, Ashland Oil & Refining Co. 8 Wallace Williams wildcat prospect on Laurel Creek Dome of the Paint Creek Uplift is drilling at 2,015 ft

In Estill County and on White Oak Creek, 23-P-67, Arch Carpenter et al are drilling at 2,950 ft. on 1 Pete Wells several miles west of the Furnace gas field.

In southern Magoffin County and close to the Breathitt County line, John Diederich et al 1 Louisa Craft, 17-N-77, is drilling at 2,275 ft. Test is located about 3½ miles southwest of the newly discovered Bee Tree gas field which produces from the Big Six sand at the base of the Corniferous lime.

INDIANA

EVANSVILLE.—On the south side of Mt. Carmel pool, Illinois Mid-Continent Petroleum Co. has completed 1 Mary Kieffer heirs, SE SW SE 26-1s-12w, with an initial production of 50 bbl. per day from the Benoist at 2,096-2,108 ft. The same operator is testing the lower Cypress at a southeast offset well, 1-B Kieffer heirs.

Dome Gas Co. has completed another Devonian well in the south edge of Marts pool in Sullivan County. The well, 1 J. Bohannon, SW SW SW 17-9n-9w, made 55 bbl. per day. The Devonian was topped at 2,117 ft. and well drilled to a total depth of 2,239 ft. This well is a northeast offset to a 60-bbl. Devonian well completed last week, A. S. Reed 1 G. L. Bolinger.

George C. Schoonmaker is moving in rotary tools for further tests of the Aux Vases at 1 Bishop Grimmelsman, SE SE SE 9-8s-14w, Posey County, north of College pool. The well had a show of oil and gas in a 2-hour test of the Palestine early in December.

INDIANA WILDCAT FAILURES

Grant County: Luther Van Horn 1 E. Woodmansie, SE NE NE 22-25n-6e, dry, TD 1,283 ft.

Miami County: Merrill C. Fletcher 1 W. Miller, NE NW NW 16-27n-5e, dry, TD 1,001 ft.

Sullivan County: F. B. Cline 1 W. L. Nash, SW SW NW 34-7n-9w, dry, TD 2,627 ft.

APPALACHIAN FIELD

Good Gas Well Made in Marsh Fork District

PITTSBURGH.—In Marsh Fork district, Raleigh County, West Virginia, Big Marsh Oil Co. brought in a good gas well in the Weir sand, 13-BM13 Rowland Land Co., gaging 1,212,000 cu. ft.; total depth 2,652 ft. In Beaver Pond district, Mercer County, United Fuel Gas Co. 6478 A. W. Hicks, wildcat, encountered a fishing job at 621 ft.; in Big Creek district, McDowell County, this company's 6218 New River & Pocahontas Coal Co. is drilling at 7,175 ft. In Kingwood district, Preston County, Hope Natural Gas Co. 9209 Frank Barlow ran the 7-in. casing at 8,006 ft.; in Portland district, this company's 9315 P. S. Pyles is drilling at 1,294 ft. Also in Portland district, Preston County, William E. Snee is fishing at a depth of 5,540 ft. in 3 Sisler, preparing to deepen.

In Shade Township, Somerset County, Peoples Natural Gas Co. 3725 R. F. Grove, deep wildcat, is drilling at 9,314 ft.; in Unity Township, Westmoreland County, this company's 3830 William Piper is drilling at 8,250 ft.; and in Derry Township, 3814 Camilla Giffin at a depth of 7,982 ft.

New locations in Pennsylvania were five: Boggs, Mahoning, and Redbank townships, Armstrong County, and Nottingham Township and Twilight Borough, Washington County.

ILLINOIS

Clay County Discovery Hits in McClosky

MATTOON. — In Clay County and just southwest of the town of Clay City, Russell P. Johnson and Calvert & Willis have opened McClosky production at 1 Pierce-Weller, SW SW SW 19-3n-8e. Operators have run casing to the top of the McClosky after a 1-hour drill-stem test at 3,008-33 ft., had gas in 11 minutes and recovered 1,380 ft. of oil plus 180 ft. of mudcut oil with no water. Bottom-hole pressure was 1,280 psi.

The area near Berryville pool in the northwestern corner of Wabash County was not very active during most of the months of last year, but in the first week of this year Phillips Petroleum Co. completed 2 Marx with an initial production of 142 bbl. per day from the McClosky. Phillips now has another very good McClosky well in the area. The well, Phillips 1 Tarpley, NE NW NE 2-1n-14w, flowed 210 bbl. in 2 hours and is shut in for tank space. The McClosky pay is at 2,900-06 ft. and has not been acidized.

George S. Engle is rigging up cable tools to test the Hardinsburg at 1 R. V. Stinson, NE SE SW 9-9s-9e, prospective discovery well about 1 mile northwest of North Shawneetown pool.

In the southeastern part of Jasper County, Charles A. Baldwin is cleaning out and testing the O'Hara at 1 Clara Burton, NE NE NE 33-6n-14w, after setting casing at 2,775 ft. The well is northeast of Ste. Marie pool.

The Christian County pool, North Assumption, was opened in December by National Associated Petroleum Co. and Continental Oil Co. 1 Lawrence with production from the Devonian. Rosiclare pay has been added in the pool and the same operators have recently completed 4 J. Lawrence, SE SE NE 9-13n-1e, flowing 330 bbl. per day from the Rosiclare at 1,146-58 ft.

ILLINOIS WILDCAT FAILURES

Christian County: H. M. Kune 1 J. O. Lambdin, NW NW NW 14-13n-1e, dry, TD 2,370 ft.

Gallatin County: L. Cochran 1 Clayton, SE SW SW 16-9s-10e, dry, TD 2,858 ft.

Richland County: Aurora Gasoline Co. 1 Hammler, SW SW SE 24-2n-14w, dry, TD 3,025 ft.

Saline County: B. M. Heath 1 Clifton Gainer, SW SW SW 36-7s-7e, dry, 2,386 ft.

MICHIGAN

Muskegon Wildcat Strikes Good Pay in Traverse

MOUNT PLEASANT.—Following acidization with 500 gal., P. K. Degenther 1 Paul Herman, SE SE NE 19-10n-13w, Casnovia Township wildcat, Muskegon County, was reported to be flowing at the rate of 15 bbl. of oil an hour from a Traverse pay second day following treatment. Production was being flowed through a restricted choke.

The Degenther wildcat was drilled into the Traverse pay unexpectedly prior to setting of 5-in. casing. Pipe was run and cemented after well was killed with mud and water.

After cement plug had been drilled, hole was deepened in the second Traverse. An analysis of samples indicated that 2 more feet of pay had been drilled. Traverse lime was logged at 2,038 ft. Present depth is 2,042 ft.

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Four new tests on offset leases to the Herman producer were announced this week. Augie Busk, paying $20,000 for a straight ⅞ths. lease, was set to spud in the SE NW NE 19-10n-13w, and Rex Oil & Gas Co., largest acreage holder in the play, had two locations ready to be drilled.

Rotary tools were moved for Rex on the NW SW NE 19-10n-13w, on the west offset 40-acre lease. Other Rex location, which will be drilled with cable tools, was announced as the SE NE NE 19-10n-13w, north offset.

Degenther was clearing location for 2 Herman, NW SE NE 19-10n-13w, diagonal northwest 20-acre offset to the discovery.

MICHIGAN WILDCAT FAILURES

Allegan County, Valley Township: Ohio Oil Co. 1 Viola C. Ecklund, SE NE NE 24-2n-14w, dry in Traverse, TD 1,320 ft.

Valley Township: Ohio Oil Co. A-21 U. S. of America C. T., NE NE NE 27-2n-14w, dry in Traverse, TD 1,375 ft.

Otsego Township: Roosevelt Oil & Refining Corp. 1 John Meyle, NE NW SE 16-1n-12w, dry in Traverse, TD 1,485 ft.

Arenac County, Lincoln Township: Don Rayburn 1 Rossen, SW SW NE 3-18n-4e, dry in Dundee, TD 2,889 ft.

Augres Township: Ward Oil Co. 1 Robert Proulx, SW NE SW 12-19n-6e, dry in Dundee, TD 3,025 ft.

Berrien County, Buchanan Township: Norman Nelson 1 Specking, SE SE NW 32-7s-18w, dry in Trenton, TD 1,835 ft.

Gladwin County, Butman Township: H. E. Bell 1 Louthen, NW NW NE 8-20n-1w, dry in Dundee, TD 3,919 ft.

Van Buren County, Geneva Township: Gortsema & Meyer 1 Carlson, NW NW SE 31-1s-16w, dry in Traverse, TD 1,052 ft.

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PERMIAN BASIN

Ellenburger Failure Has Lower Permian Flows

MIDLAND.—Tex Harvey Oil Co. 1 Floyd, Midland County Ellenburger failure, made two flows of oil from the lower Permian before being killed to install pump-equipment. The first 24-hour test, swabbing and flowing from perforations at 7,865-75 and 8,045-55 ft., recovered 140 bbl. of new oil. A second 24-hour period yielded better than 162 bbl. of oil. Most of the oil was swabbed, but the well was said to have headed several times. Plug was to be set at 8,500 ft.

Location of the prospective discovery is 2,000 ft. from north and 660 ft. from east lines of Section 15, Block 37, TP Survey; about 15 miles southeast of Midland and 4½ miles southeast of lower Permian production found in 1946 at 8,500 ft., and which has remained a 1-well field. The 1 Floyd was drilled to 12,053 ft. in dry Ellenburger, which it entered at 11,940 ft., on an elevation of 2,603 ft. It also found the Pennsylvanian dry after acidizing and testing from 10,725-800 ft.

Magnolia Petroleum Co. was assured of a commercial well at its 1 H. G. Moore, 2½ miles southwest of Snyder in Scurry County. After washing with 1,000 gal. of acid through perforations at 6,845-65 ft., in the Canyon limestone, the well kicked off, flowed load and acid residue, then made 32 bbl. of clean oil in 6 hours, through ¼-in. choke. Following that, it flowed 81 bbl. of oil in 16 hours through the same size choke, with no water. Operators then changed to ⅝-in. tubing choke for completion tests. Location is in Section 207, Block 97, H&TC Survey.

A new wildcat and outpost test 1¾ miles east of Dermott field of Scurry County has been announced by J. L. Collins et al as 1 G. E. Parks, 1,980 ft. from north and 330 ft. from west lines of Section 442, Block 97, H&TC Survey. Contract depth was said to be 7,900 ft. The 1-well Dermott field produced from the Canyon lime around 6,330 ft.

Sun Oil Co., J. J. Perkins et al made location for their 1 Mark B. Pulliam as an Ellenburger test in Tom Green County, 3 miles north of their 1 Linthicum, which was dry in that formation. Location is 660 ft. from south and east lines of Section 8, H. M. Wells Survey, and 5 miles west of San Angelo. Western Drilling Co. prepared to move rotary rig to the new location from the 1 Linthicum.

In east-central Tom Green County, J. M. West Production Co. prepared to run a drill-stem test in the Ellenburger at its 1 Wilde, 1 mile west of the town of Wall, in Section 53, District 11, SPRR Survey. Details were not available. Total depth was reported as 5,450 ft., with top on the Ellenburger at 5,435 ft.

WEST TEXAS (DISTRICTS 8 & 7-C) SUCCESSFUL WILDCAT

Scurry County: Lion Oil Co. 2 C. T. McLaughlin, Sec. 197, Blk. 97, H&TC Sur., 9 mi. W and 1 mi. S Snyder, flowed 649 bbl. 43.6°-gravity oil in 24 hours, ¼-in. choke, Canyon 6,569-6,615 ft., GOR 829 cu. ft., CP 680 psi., TP 940 psi., TD 6,617 ft., elev. 2,381 ft.

WEST TEXAS (DISTRICTS 8 & 7-C) WILDCAT FAILURE

Ward County: Humble Oil & Refining Co. 7 Yarbrough & Allen, Sec. 17, Blk. B-13, PSL Sur., NE corner of county, dry, TD 11,230 ft., PB 4,928 ft., San Andres 2,700 ft., San Angelo 4,750 ft., Wichita 6,100 ft., base Permian 7,500 ft., Fusselman 8,710 ft., Montoya 8,960 ft., Ellenburger 10,960 ft., elev. 2,770 ft.

SOUTHEASTERN NEW MEXICO

HOBBS.—Magnolia Petroleum Co. completed its 1-C Santa Fe-Pacific as the second producer for the Crossroads Devonian field of northeast Lea County Location is

SW SW 26-9s-36e, and a ½-mile east offset to the discovery. On 24-hour potential, the well flowed 328 bbl. of oil.

Stanolind Oil & Gas Co. 1-U State, 2-20s-38e, swabbed 54 bbl. of oil and 74 bbl. of water in 18 hours, after being shut in 16 hours. Washed with 500 gal. of mud acid, it swabbed 22 bbl. of oil and 22 bbl. of water in 24 hours. Plugged back depth is 7,149 ft.

SOUTH LOUISIANA

Humble Gets Discovery Well in Duck Lake Area

NEW ORLEANS.—A new oil discovery in the Duck Lake area, St. Martin Parish, Humble Oil & Refining Co. 1 Atchafalaya Land Co., 1-15s-11e, reported a potential flow gage of 273 bbl. of 38.9°-gravity pipeline oil through a 12/64-in. choke, flowing pressure on tubing 1,060 psi. Gas-oil ratio 730. This well was drilled to a total depth of 12,525 ft., and production casing cemented at 12,488 ft. Production is through perforations at 11,642-52 ft.

Danciger Oil & Refining Co. 1 Myrtle E. Smiley, a prospective oil discovery in Livingston Parish, approximately 2 miles northeast of Springville, and more than 15 miles northeast of any oil production in South Louisiana, cored oil sand from 8,003-06½ ft. Hole was cored ahead to a total depth of 8,748 ft., and 7-in. casing cemented to 8,565 ft. for tests.

A new oil field has been opened in Pointe Coupee Parish at The Texas Co. 1 Joseph Oscar Long et al, 29-6s-8e, 1 mile northeast of Lottie townsite. Drilled to a total depth of 10,280 ft., the well flowed a potential gage of 332 bbl. of 34.6°-gravity oil per day through perforations at 8,282-90 ft., using 9/64-in. choke. Gas-oil ratio 2,350.

Lynn Oil Co.-Temple Hargrove et al 1 State Lease 318, confirmed gas production in the Big Point area of Lake Pontchartrain, St. Tammany Parish. Well is located in Lake Pontchartrain in State Lease 319, near Atlantic Refining Co. A-1 State discovery gas-condensate producer, which was completed through perforations at 7,180-86 ft. The new well was drilled to a total depth of 7,472 ft. and completed as a gas well, and shut in. The sand from which the completion was made was not reported.

SOUTH LOUISIANA SUCCESSFUL WILDCAT

Pointe Coupee Parish: New oil pool "Fordoche"—The Texas Co. 1 Joseph Oscar Long et al, 29-6s-8e, 1 mi. NE of Lottie townsite, TD 10,280 ft., top sand 8,282 ft., perf. 8,282-90 ft., IP 332 bbl. oil per day through 9/64-in. choke, GOR 2,350, TP 1,600 psi., gravity 34.6°. Comp. 1-2-49.

SOUTH LOUISIANA WILDCAT FAILURES

Beauregard Parish: O'Mears Borthers C-1 Long Bell Pet. Co. et al, 5-5s-7w, dry, TD 8,762 ft.

Vermilion Parish: Pure Oil Co. A-1 State Lease 880, Block 39, Vermilion area of Gulf of Mexico, 8 mi. offshore and 14 mi. SW of Pecan Island, dry, TD 9,103 ft. Comp. 1-7-49.

LA.-ARK.

Deep Wildcat Cores Cotton Valley

SHREVEPORT.—Southwest Gas Producing Co. 1 W. I. Burgess, 1 mile southeast of the Lisbon field in 8-20n-4w, Lincoln Parish, cored from 8,695-8,713 ft., in the Cotton Valley, and recovered slightly porous sand with gas-distillate odor and taste. Top of the formation was entered at 8,080 ft., on an elevation of 307 ft. Operators continued drilling below 8,785 ft. It is projected to 10,000 ft.

Barnsdall Oil Co. 1 Robert Sykes, deep wildcat in 1-22n-9w, Webster Parish, was believed ready for completion tests at plugged back depth of 5,716 ft. According to last report, the well flowed 179 bbl. of 47.6°-gravity oil in 17 hours, through ¼-in. choke, from perforations at 5,654-98 ft.

In Columbia County, Arkansas, south of the Atlanta field, Lion Oil Co. 1 Story, 20-18s-19w, perforated casing at 6,916-32 ft., then ran a 7-hour drill-stem test, with packer at 6,841 ft. Using ¼-in. top and bottom chokes, recovery was 1,980 ft. of oil-cut mud and 2,727 ft. of salt water. A squeeze job was run and testing was to continue. The above perforations were in the Cotton Valley, topped at 6,036 ft. Total depth was 8,476 ft., in the Smackover, which has shown for commercial production of 40°-gravity oil.

Carter Oil Co. 1 Frank Landers, 28-14s-18w, Ouachita County, new Smackover wildcat 5 miles northeast of the Wesson field, cored sandy shale with a slight oil odor at 2,160-62 ft., and sand with slight show of oil at 2,202-07 ft. A drill-stem test from 2,156-62 ft. recovered 35 ft. of mud with no shows.

Texas Hearing to Consider Multiple Completions

HOUSTON.—On March 8, the Texas Railroad Commission will hold a hearing to consider the subject of multiple-completion oil and gas wells.

Testimony has been taken at two recent state-wide proration hearings as to whether the practice should be continued. Several hundred wells throughout the state are producing from more than one reservoir.

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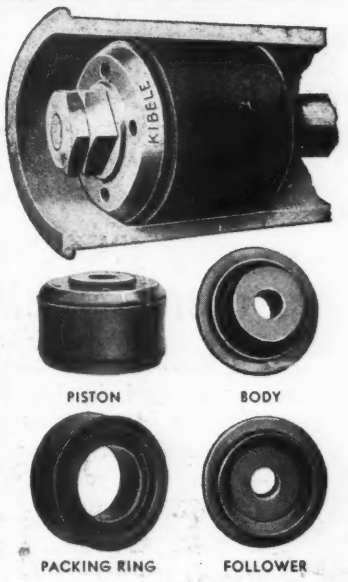

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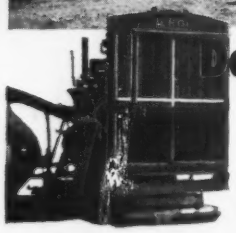

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CANADIAN FIELDS

New Alberta Production Record 42,464 Bbl. Per Day

ALBERTA'S estimated oil production climbed more than 2,000 bbl. daily last week to reach a new all-time record of 42,464 bbl. daily, according to the Conservation Board. Previous record was set a week earlier, when estimated daily average yield was 40,245 bbl.

The latest week includes 23,356 bbl. daily for 178 from Leduc-Woodbend, a new record; 1,625 bbl. daily from 4 Redwater wells; 12,125 bbl. daily from 281 Turner Valley wells. These are actual recoveries for the period. The total also included the following estimates based on actual November yield; Lloydminster, 1,772 bbl. from 68 wells (Alberta side of field only); other fields 2,015 bbl. from 94 wells; and Turner Valley natural gasoline, 1,570 bbl. daily.

A king-sized oil land play is getting into swing in Saskatchewan. The Saskatchewan Government has received applications for permits to explore another 7,561,000 acres of Crown oil and gas rights, raising total under commitment in the province to 13,340,000 acres. Bulk of the lands flank the Alberta border for 365 miles from the United States boundary to Beaver River. Husky Oil & Refining is the largest holder of Saskatchewan rights, with permits given or applied for on 3,926,000 acres. Other Saskatchewan permit and lease holders are smaller independent groups.

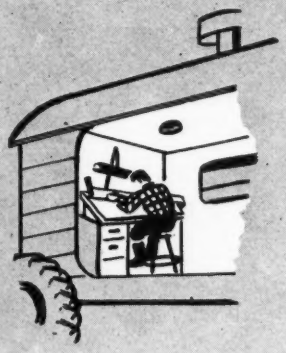
The British American Oil Co., Canada's No. 2 oil refiner and marketer, plans a record exploration and development program in Alberta this year. Minimum budget will be 2 million dollars, with more available if conditions warrant. Immediate plans are to keep one drilling rig running at Leduc, start two rigs jointly with Hudson's Bay Oil & Gas at Redwater, and start two other rigs on wildcat drilling to follow up 1948 geophysical work. Two seismograph parties and a gravitymeter will be continued in the field. Current Alberta reservation and lease rights of 500,080 acres may be expanded.

End object is to add 10,000 bbl. daily to B-A's Prairie refinery cracking capacity, now 11,500 bbl., to meet requirements of the company's expanding market. Crude oil supplied must first be assured, by B-A's oil development, joint operations with independents, and purchases from independent producers. Still to be decided is whether the Moose Jaw and Calgary refineries will be enlarged, or a new plant erected at another Prairie city.

Redwater news was made this week when Imperial Oil's third success, Redwater 3, went on production with a post-acid flush oil flow of 1,935 bbl. daily. This week end Anglo-Home 3 and P. S. & P. 1 are slated to go on production.

Superior Oils, Ltd. and General Petroleums, Ltd., have joined to carry out a large exploratory drilling program in the Plains section of Alberta limelighted by the Leduc-Redwater discoveries. The two, in association with major and other independent groups, plan to drill at least half a dozen seismograph-indicated features on the Alberta Plains this year.

The first will be at Joseph Lake, 22 miles due east of the Leduc oil field, on a 10,240-acre lease block owned by Imperial Oil, Ltd. The 16-section block was leased by Imperial following seismograph survey which showed presence of a favorable anomaly. Initial well, Superior-Joseph Lake 1, will be drilled near center of the block in LSD 11, 22-50-22w4. Superior is providing 25 per cent of first well cost, General Pete 30 per cent, while other independents share 45 per cent. They will share on the same percentage basis in half of any production and half of any development costs following completion of the initial well.



Highways

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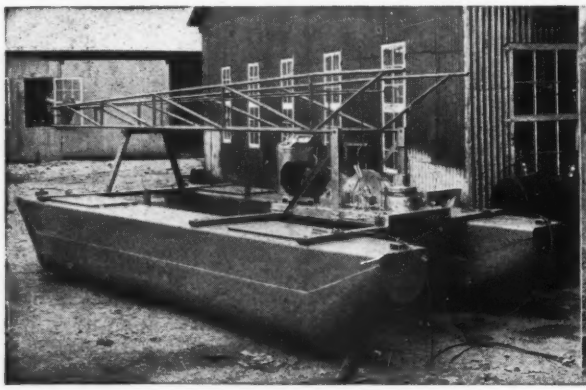

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Drilling Depth—200 ft.

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STANDARD EQUIPMENT:
Water Tank—300 gal. cap.
Wooden lined powder box
Cap box

SPECIFICATIONS:
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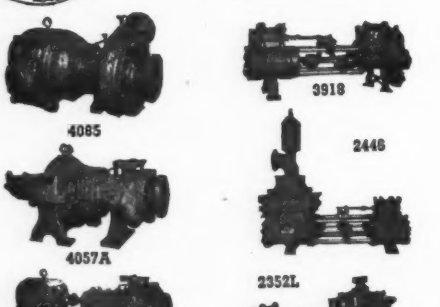

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THE OIL AND GAS JOURNAL
BOX 1260 **TULSA 1, OKLA.**

December Completions Gain 38 Per Cent Over Last Year

by Polly De Armond

NEW wells completed during December 1948 totaled 3,636, an increase of 1,007 wells, or 38.2 per cent, over December 1947. This gain was made up of 626 oil producers, 14 gas wells and 367 dry holes. Total footage at 13,091,793 ft. as compared to 9,170,822 ft. in the same month of the previous year, was up 42.7 per cent.

Deep Drilling

Continued deeper drilling was indicated by increases particularly in the greater depth classifications. The most outstanding gain was in the group of completions over 10,000 ft., which was up 37 wells, or 57.8 per cent. The 5,000-10,000-ft. classification was second with an increase of 42.8 per cent, followed by the 2,500-5,000-ft. group, up 40.6 per cent, and wells below 2,500 ft., up 32.5 per cent. The average well depth for December 1948 was 3,601 ft. compared with 3,488 ft. for December 1947.

All areas noted gains both in number of wells and footage drilled. The Texas-New Mexico area was up 68.8 per cent in completions, which totaled 1,364 against 808, and 61.8 per cent in footage which climbed to 5.7 million feet compared with 3.5 million feet during the same month of the previous year.

The Mid-Continent states of Oklahoma, Kansas and Nebraska had an increase of 191 wells, or 35 per cent, and a gain of 803,784 ft., or 46.6 per cent. The Southern section, including Arkansas, Louisiana, Alabama, Georgia, Florida, Mississippi and Tennessee, reported a 34 per cent increase in completions, represented by 75 wells, and a 42.2 per cent gain in footage, an additional 475,283 ft., in December 1948.

Completions for the Pacific Coast were up 55 wells, or 34.8 per cent, and depth drilled rose 26.9 per cent for a net gain of 172,758 ft. The North Central division, made up of Ohio, Indiana, Illinois, Kentucky and Michigan, drilled 99 more wells and 184,775 more feet during the month, for a gain of 22.5 per cent in completions and 17.2 per cent in footage over the corresponding month in 1947.

Smaller gains were found for the Rocky Mountain region and Eastern district in the December-vs.-December analysis. Montana, Wyoming, Colorado and Utah increased 8.3 per cent in wells and 11.2 per cent in total depth drilled, while New York, Pennsylvania and West Virginia completions were up 6.5 per cent and footage rose 8.5 per cent.

Cumulative Comparisons

Total completions for 1948 reached 39,778, the record number of new wells finished in any year in the industry's history and an increase of 20.1 per cent over the cumulative for 1947. Total footage drilled, 137,391,848 ft., also an all-time high, increased 20.4 per cent over the previous year.

SUMMARY OF COMPLETIONS, DECEMBER 1948

	Total comp.	Oil	Initial prod.	Gas	Dry	Under 2,500 ft.	2,500-5,000 ft.	5,000-7,500 ft.	7,500-10,000 ft.	Over 10,000 ft.	Total footage	Rigs and drilling
New York	88	44	186	0	44	88	0	0	0	0	127,146	135
Pennsylvania	233	115	267	22	96	214	19	0	0	0	380,115	266
West Virginia	75	12	127	55	8	27	41	7	0	0	220,675	181
Ohio	119	40	1,100	35	44	64	55	0	0	0	297,081	186
Indiana	84	42	4,121	3	39	68	16	0	0	0	157,683	117
Kentucky	71	29	1,289	16	26	54	17	0	0	0	143,378	33
Illinois	182	88	9,837	1	93	57	125	0	0	0	476,215	289
Michigan	83	43	2,860	1	39	54	29	0	0	0	185,279	148
Kansas	336	187	76,925	18	131	42	292	2	0	0	1,090,178	394
Neb., Mo., Iowa	1	0	0	0	1	1	0	0	0	0	410	10
Oklahoma	400	235	28,294	20	145	121	183	70	15	11	1,515,241	662
Texas	1,306	770	124,329	67	469	353	536	254	131	32	5,489,683	1,335
North	283	122	8,264	3	158	163	82	37	1	0	724,842	261
West Central	156	76	11,434	3	77	50	100	6	0	0	480,610	147
West	324	269	76,009	4	51	44	151	62	54	13	1,629,619	229
Panhandle	71	52	4,057	17	2	5	65	0	1	0	223,704	151
Eastern	91	55	8,134	13	23	7	53	20	10	1	458,947	88
Gulf Coast	168	81	8,643	17	70	11	32	59	50	16	1,104,347	259
Southwest	213	115	7,788	10	88	73	53	70	15	2	867,614	200
Louisiana	208	133	12,175	9	66	91	27	23	31	36	1,070,866	272
Northern	129	95	5,519	6	28	90	20	11	4	4	355,896	96
Southern	79	38	6,656	3	38	1	7	12	27	32	714,970	176
Arkansas	30	11	959	0	19	6	14	4	5	1	139,133	16
Mississippi	52	25	4,463	3	24	1	7	22	9	13	383,587	36
Ala., Ga., Fla.	2	1	230	0	1	1	1	0	0	0	5,608	9
Tennessee	4	1	30	0	3	4	0	0	0	0	2,409	8
Montana	25	12	1,199	6	7	9	14	2	0	0	59,861	69
Wyoming	49	30	5,490	2	17	4	32	13	0	0	201,892	221
Colorado-Utah	17	6	571	3	8	5	4	7	1	0	78,525	69
New Mexico	58	38	6,321	6	14	7	33	12	4	2	251,428	133
California	213	174	25,404	2	37	70	95	31	11	6	815,400	372
Total December 1948	3,636	†2,036	306,177	269	*1,331	1,341	1,540	447	207	101	13,091,793	‡4,961
Total November 1948	3,431	1,968	285,314	220	1,243	1,415	1,370	376	191	79	11,787,317	5,144
Total December 1947	2,629	1,410	224,365	255	964	1,012	1,095	458		64	9,170,822	4,522
Cumulative 1948	39,778	22,585	3,361,010	2,897	14,296	15,797	16,296	4,568	2,162	955	137,391,848	
Cumulative 1947	33,122	17,999	3,144,941	3,305	11,818	14,102	12,687	5,516		817	114,061,358	

*Incl. 155 service wells: N. Y. 44, Pa. 92, Ohio 8, Ky. 1, Kans. 1, Okla. 4, No. Tex. 3, W. Cent. Tex. 1, Tex. Gulf 1. †Incl. 23 distillate wells: Okla. 4, Tex. Gulf 11, SW. Tex. 1, No. La. 3, So. La. 1, Miss. 1, N. Mex. 2. ‡Incl. all wells rigged up and/or drilling at end of month.

STATISTICS and

WEEKLY WELL COMPLETIONS . . . WEEK ENDED JANUARY 22, 1949

	Total of all wells					Cum.		Wildcat completions and discoveries					Cumulative total, 1949				
	Comp.	Oil	Gas	Dry	Footage	1949	1948	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	21	9	0	*12	21,031	60	143	0	0	0	0	0	0	0	0	0	0
Pennsylvania	37	16	5	†16	63,574	116	261	0	0	0	0	0	0	0	0	0	0
West Virginia	10	3	5	2	25,751	33	50	0	0	0	0	0	0	0	0	0	0
Ohio	28	7	11	‡10	73,555	71	87	0	0	0	1	1	0	0	0	3	3
Indiana	28	12	0	16	45,710	70	63	0	0	0	3	3	1	0	0	12	13
Kentucky	13	4	5	4	34,142	34	48	0	0	0	0	0	0	0	0	2	2
Illinois	35	19	1	15	89,570	139	174	0	0	0	4	4	2	0	0	27	29
Michigan	16	6	0	10	37,668	58	69	0	0	0	8	8	1	0	0	25	26
Kansas	62	34	3	25	175,584	187	205	1	0	0	9	10	2	0	0	27	29
Neb., Mo., Iowa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oklahoma	66	46	1	19	210,364	250	271	2	1	0	9	12	13	3	0	39	55
Texas	272	167	23	82	1,236,867	839	791	2	0	3	37	42	29	0	5	139	173
North Central (Dist. 7-B & 9)	67	32	1	34	188,281	260	240	1	0	0	14	15	16	0	0	62	78
West (Dist. 7-C & 8)	69	63	1	5	358,089	201	201	1	0	0	1	2	3	0	0	10	13
Panhandle (Dist. 10)	26	12	12	2	81,672	61	52	0	0	0	0	0	0	0	0	0	0
Eastern (Dist. 5 & 6)	15	11	1	3	67,900	39	46	0	0	0	2	2	0	0	0	7	7
Gulf Coast (Dist. 2 & 3)	47	26	5	16	303,368	145	127	0	0	2	9	11	6	0	4	33	43
Southwest (Dist. 1 & 4)	48	23	3	22	237,557	133	125	0	0	1	11	12	4	0	1	27	32
Louisiana	42	32	3	7	241,987	155	147	1	0	0	2	3	1	0	0	10	11
Northern	18	15	3	0	46,070	95	100	0	0	0	0	0	0	0	0	6	6
Southern	24	17	0	7	195,917	60	47	1	0	0	2	3	1	0	0	4	5
Arkansas	0	0	0	0	0	3	34	0	0	0	0	0	0	0	0	1	1
Mississippi	9	4	0	5	70,648	22	36	0	0	0	3	3	0	0	1	6	7
Southeastern States	1	0	0	1	3,892	4	4	0	0	0	1	1	0	0	0	3	3
Montana	2	1	1	0	3,290	10	25	0	0	0	0	0	1	0	0	1	2
Wyoming	5	2	0	3	24,582	24	34	1	0	0	2	3	2	0	0	5	7
Colorado-Utah	1	1	0	0	8,286	17	24	1	0	0	0	1	1	0	0	4	5
New Mexico	5	2	0	3	13,997	33	57	0	0	0	1	1	1	0	0	3	4
California	66	50	0	16	247,248	173	184	1	0	0	13	14	5	0	0	27	32
Total United States	779	415	58	246	2,627,746	2,298	2,707	9	1	3	93	106	59	3	6	334	402
Total previous week	852	473	49	312	3,189,271	1,579	2,034	26	1	1	140	168	50	2	3	241	296
Total January 24, 1948	673	396	48	239	2,414,429			13	0	4	90	107	54	1	16	363	434

Service wells included: *12, †16, ‡1.

CRUDE PRICES AND REFINERY ACTIVITY

GRAVITY SCHEDULES

Gravity—	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast Tex.*	West Tex.†
18-18.9	$2.17	....	....	....
19-19.9	2.19	....	....	....
20-20.9	2.21	$2.25	....	$2.12
21-21.9	2.23	2.27	....	2.14
22-22.9	2.27	2.29	....	2.16
23-23.9	2.30	2.31	....	2.18
24-24.9	2.34	2.33	$2.56	2.20
25-25.9	2.38	2.35	2.58	2.22
26-26.9	2.41	2.37	2.60	2.24
27-27.9	2.45	2.39	2.62	2.26
28-28.9	2.49	2.41	2.64	2.28
29-29.9	2.52	2.43	2.66	2.30
30-30.9	2.56	2.45	2.68	2.32
31-31.9	2.59	2.47	2.70	2.34
32-32.9	2.62	2.49	2.72	2.36
33-33.9	....	2.51	2.74	2.38
34-34.9	....	2.53	2.76	2.40
35-35.9	....	2.55	2.78	2.42
36-36.9	....	2.57	2.80	2.44
37-37.9	....	2.59	2.82	2.46
38-38.9	....	2.61	2.84	2.48
39-39.9	....	2.63	2.86	2.50
40 and above	....	2.65	2.88	2.52

*For crude from Daboval, El Campo, and Sand Point. †Includes Lea County, New Mexico. Last general price change represented a 50-cent increase becoming effective December 6, 1947. (For detailed price changes in all fields see The Oil and Gas Journal, January 1, 1948, page 107.)

A.P.I. REFINERY REPORT, WEEK ENDED JANUARY 15

(Thousands of barrels)

District—	Crude runs, daily avg.	Production: Gasoline†	Kerosine	Gas & dist. oil	Residual	Stocks at refineries, bulk terminals, in transit and in pipe lines: Gasoline*	Kerosine	Gas & dist. oil	Residual
East Coast	843	2,403	329	1,565	1,676	23,961	9,873	21,003	12,470
Appalachian:									
District 1	105	325	65	121	102	2,675	421	936	458
District 2	73	263	28	44	105	1,366	121	246	222
Ind., Ill., Ky.	987	3,363	483	1,097	1,152	23,424	3,862	10,513	5,404
Okla., Kans., Mo.	452	1,723	211	508	547	10,970	1,237	4,725	2,706
Inland Texas	226	1,124	83	196	398	4,234	624	782	1,219
Texas Gulf Coast	1,426	4,451	851	2,252	1,767	16,082	3,141	13,369	10,482
La. Gulf Coast	442	1,438	459	605	467	6,160	1,848	3,766	3,696
N. La. and Ark.	88	250	66	80	120	2,629	457	837	339
Rocky Mountain:									
New Mexico	13	50	7	24	27	103	35	53	36
Other Rocky Mtn.	155	515	27	198	241	2,818	177	1,455	971
California	911	2,527	153	1,059	2,585	12,797	797	12,806	47,506
Jan. 15, 1949	5,721	18,432	2,762	7,749	9,187	109,219	22,593	70,491	85,609
Jan. 8, 1949	5,752	18,278	2,493	7,789	9,153	107,111	23,368	73,941	85,544
Jan. 17, 1948	5,344	16,236	2,489	7,496	8,880	98,751	12,975	44,482	51,601

*Finished and unfinished. †At refineries including natural blended.

Bureau of Mines crude-oil stocks 241,415,000 bbl. as of January 8—down 1,602,000 bbl. One year ago 219,998,000 bbl.

FLAT CRUDE PRICES

Representative posted schedules per bbl.

East Texas†	$2.65
Kettleman Hills, California*	2.14
Beauregard Parish	2.60
Illinois Basin	2.77
Pecos County, Texas (Yates)	2.35
Bradford, Pennsylvania	4.00
Eastern Ill. and Western Ind.†	2.77
Tomball, Texas Gulf Coast	2.83

*37°-37.9°. †35° and above.

TRENDS

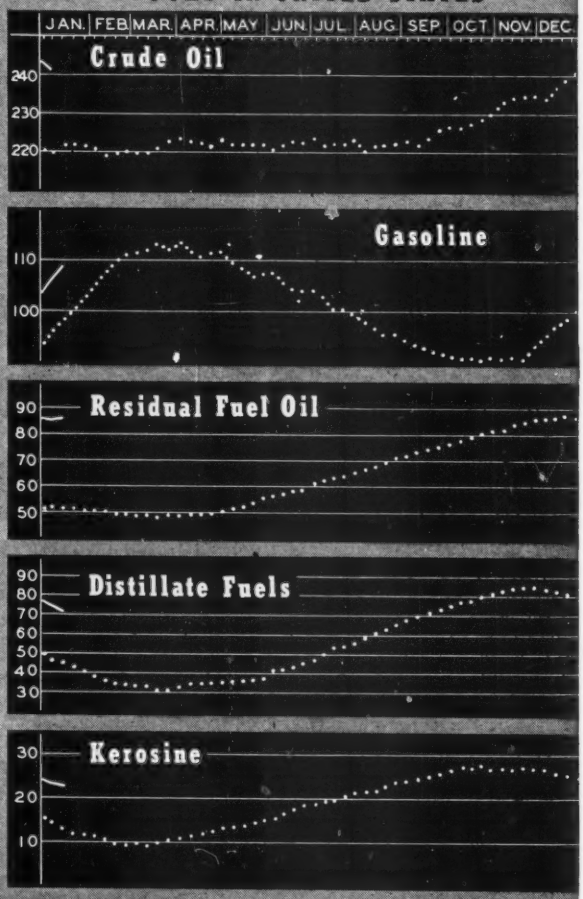
DAILY AVERAGE PRODUCTION FOR WEEK

	Jan. 22 crude oil	B. of M. Jan. demand	Jan. 15 crude oil
Alabama	1,150	1,700	1,300
Arkansas	83,100	84,000	83,350
California	949,700	950,000	950,000
Colorado	*64,650	52,000	62,550
Eastern	61,800	62,300	62,250
Florida	1,250	1,300	1,300
Illinois	180,600	165,000	183,400
Indiana	23,100	21,000	25,100
Kansas	292,350	300,000	296,550
Kentucky	23,800	22,000	24,300
Louisiana	502,450	483,000	503,050
North Louisiana	117,400	.....	118,000
South Louisiana	385,050	.....	385,050
Michigan	45,300	45,000	45,200
Mississippi	118,650	126,000	115,750
Montana	25,400	24,000	25,600
Nebraska	300	700	300
New Mexico	135,500	127,000	134,770
Oklahoma	440,500	425,000	442,400
Texas	2,333,490	2,450,000	2,333,490
Dist. 1 (Southwest)	26,910	.....	26,910
Dist. 2 (Southwest)	162,025	.....	162,025
Dist. 4 (Southwest)	225,550	.....	225,550
Dist. 3 (Gulf Coast)	452,755	.....	452,755
Dist. 5 (Eastern)	46,150	.....	46,150
Dist. 6 (Eastern)	115,475	.....	115,475
East Texas field	289,000	.....	289,000
Dist. 7-C (West)	48,350	.....	48,350
Dist. 8 (West)	676,850	.....	676,850
Dist. 7-B (W. Central)	62,600	.....	62,600
Dist. 9 (N. Central)	138,625	.....	138,625
Dist. 10 (Panhandle)	89,200	.....	89,200
Wyoming	145,500	140,000	145,780
Total United States	†5,428,590	5,480,000	5,436,440
Change from prev. wk., dn.	7,850		

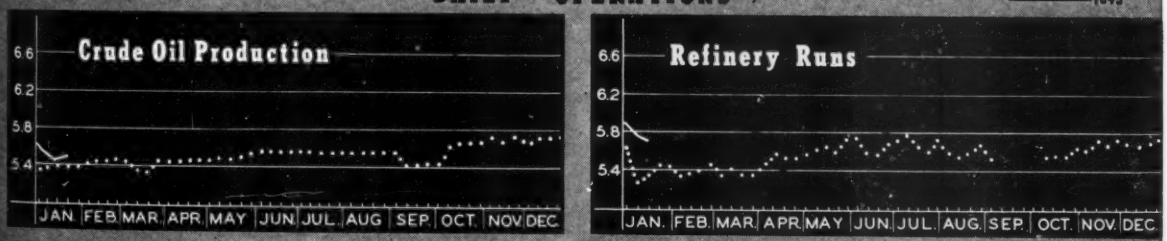
Total production January 1-January 22 ‡121,683,230 bbl.
Same period last year (crude plus cond.) 118,353,895 bbl.

*Incl. 150 bbl. Utah production. †Not incl. 82,175 bbl. condensate. ‡Incl. 1,794,600 bbl. condensate.

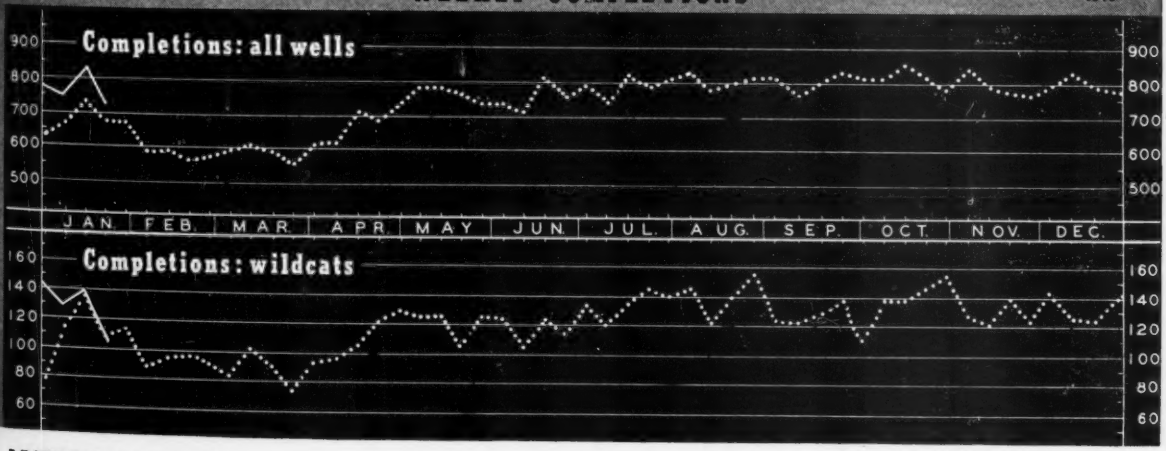
STOCKS IN UNITED STATES



DAILY OPERATIONS



WEEKLY COMPLETIONS



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Clear reading with raised numerals and graduations. Accurate to .001 inch. Corrosion-proof. Last a lifetime.

Numerals read up or down, as desired, in feet, either decimal scale to 0.01 feet or inches to 1/8".

Furnished complete with numerals, mounting screws, ready to install. Numerals available up to 40 feet.

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MARKETS

SOME further evidence was noted last week in the softening of certain crude and products markets. Lowering of some price levels, cutting back of production, and a comparatively weak demand emphasized what has been apparent to the industry in recent months—that supply has well caught up with demand.

The third price reduction in the past 6 weeks for Pennsylvania Grade Crude oil was announced by the Joseph Seep purchasing agency of South Penn Oil Co. Reductions ranged from 44 to 54 cents per barrel. A price reduction of 50 cents for Bradford crude brought a new price quotation of $4.

Production of crude oil in the United States for the week ended January 22 was down slightly. Texas cut its allowable for February by more than 66,000 bbl. daily, which marked the second consecutive reduction for the state's crude-oil allowable. The January allowable had been cut by 250,985 bbl. daily.

The Bureau of Mines recently reported that total demand for all oils averaged 6,083,000 bbl. daily in the first 11 months of 1948. This amounts to an increase of only 4.4 per cent over 1947, below what most observers predicted.

East Coast Area

A leading executive of a major East Coast supplier made these comments last week:

"In this section, heavy fuel oil is now in the same price relationship to coal as existed in 1941 and in the early part of 1946. It is too early yet to see definitely what the results will be from these reductions, but to heavy users, most of whom have dual consuming equipment, price is what counts above all else."

The third cut in heavy-fuel prices became general earlier in the week, bringing total reductions to 70 cents in the New York Harbor. Marketing officials were watching closely for signs of an improvement in demand.

Warm weather contributed to the weak market. Talk continued of a possible lowering of No. 2 prices. Quoted prices for No. 2 and kerosine remained at 8.5 and 10.2 respectively, but spot material was reported moving at lower figures.

Mid-Continent Area

Despite the generally low temperature experienced in the Mid-Continent area the petroleum-products spot market continued its recent trend of lowering price levels.

As long as the easy availability of all products remains and storage levels continue high along with refinery output there is little chance of soon overcoming the present sluggish market even though there should be prolonged freezing temperatures, one observer said.

Reductions in published prices for No. 6 residual fuel oil in the Mid-Continent area have brought the price for spot-market material, Group 3, to $1.45 to $1.65. Reductions of ¼ cent were noted on the quoted low price of No. 1, No. 2, and No. 3 fuel oils; No. 6 residual oil was reduced 5 cents on the high.

Gulf Coast Area

Spot-market trading on the Gulf Coast continued slow. Light products prices of most suppliers remained unchanged. Much interest was expressed in the latest allowable slash of the Texas Railroad Commission and the latest drop in the price of Pennsylvania crude.

Bunker C for cargo delivery is being quoted at $1.70 per barrel, and for ships' bunkers at $1.80. This represents the third drop since November on this material.

Representative Quotations

Representative spot-market quotations of leading suppliers as of January 24, 1949. Figures are f.o.b. plant for tank-car shipment in cents per gallon, except for residual fuel oil which shows the price per barrel and wax, in cents per pound.

GASOLINE, KEROSINE, AND FUEL OILS

	Mid-Continent Group 3	New York Harbor	Texas Gulf Coast
Regular gasoline, 73-75 octane	10-10¼	12.0-12.4* 11.0-12†	10.3-12.5
Premium gasoline, 78-80 octane	10¾-11	12.0-13.4	11.0-13.5
42-44 w.w. kerosine	9¼-9½	10.3-	9.1-10.5
No. 2 straw fuel oil	8¼-8¾	9.1-	9-9½
No. 6 residual	$1.40-1.50	$2.55-2.65	$2.05-2.08

*Branded (74-76 octane); †Unbranded (74-76 octane).

NATURAL GASOLINE

	Group 3	North Texas	N. La.
Grade 26-70	8½	8	8¼
Grade 18-55	10.2	9.6	9.9

LUBRICATING OILS
South Texas

200 vis., No. 2-3 neutral	12-13.5
750 vis., No. 3-4 neutral	15-16.5
2,000 No. 5-6 neutral	17-18.5

LUBRICATING OILS
Mid-Continent

150-160 vis., D bright stock, 0-10 pp.	27
200 vis., No. 3 neutral, 0-10 pp.	17

Western Pennsylvania

144-155 vs. 10 p.t. bright stock	27.0-40.5
180 vis. p.t. neutral	27.5-38.5

CRUDE-SCALE WAX
Mid-Continent

132-134 A.M.P.	8

Designers, Fabricators and Erectors of

METALLIC BUILDING COMPANY
HOUSTON, TEXAS

PREFABRICATED STRUCTURAL STEEL
BUILDINGS FOR INDUSTRY

RIGHT: The Schlumberger Well Surveying Corporation branch office, Shawnee, Okla.

BELOW: Schlumberger storage building at Houston field office on Long Drive.

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VENEZUELA - JAMAICA - CUBA
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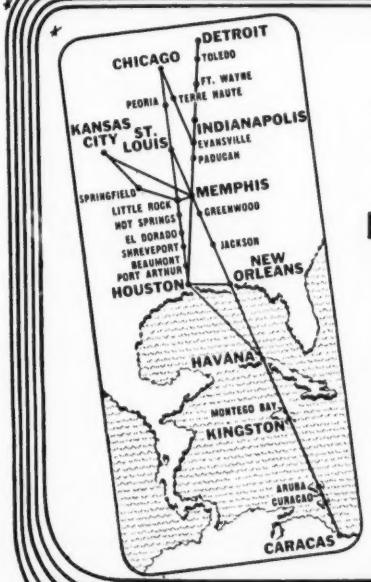
NEW ORLEANS and HOUSTON



The C & S "CARIBBEAN COMET" provides direct, one-carrier service to Venezuela and South America from the oil and industrial area of the Southwest. One-plane service to Caracas and Kingston. Non-stop service from Houston to Havana. Four flights weekly from both Houston and New Orleans by fast, four-motored Dixieliners. Departures every Tuesday, Thursday, and Saturday afternoon.

Ask your travel agent, or

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C★S

EQUIPMENT MEN ... in the News

Ardun Co. Made Distributor For Tube Turns, Inc.

H. W. ARDUSER

R. H. DUENNER

Ardun Co., of Tulsa, has been appointed a distributor of Tube-Turns, Inc.'s welding fittings and flanges, it is announced by John G. Seiler, executive vice president. Ardun is a partnership formed by H. W. "Doc" Arduser and Robert H. Duenner. It also handles the industrial products of other nationally recognized manufacturers.

Arduser began his career with Pure Oil Co., in 1932, becoming chief production engineer of the eastern producing division. Duenner joined Bethlehem Steel Corp. in 1939 at Bethlehem, Pa., and later was assigned to the firm's sales staff in Tulsa.

Scott Named American Representative in Texas

W. A. SCOTT

W. A. "Scotty" Scott of Houston has been named Texas Gulf Coast representative for American Manufacturing Co., of Fort Worth, G. L. Messer, vice president, has announced. Scott has been associated with oil-field equipment and supply business for 35 years, the past 16 in Texas and the Gulf Coast area.

Equipment manufactured by American includes geared pumping units, pumping jacks, rod-line equipment, and a complete line of associated surface production supplies.

J. D. Reed, Beech Agent At Houston, Expanding

J. D. Reed Co., Beechcraft sales and service agent at Houston, has started a $350,000 expansion program, featuring a huge new hangar, 483 ft. wide and 130 ft. deep, for storage and service of personal airplanes, to be located at the south end of Houston's municipal airport.

Reed not only has the largest volume of sales of any distributor of Beech planes but also maintains the biggest Beech sales and service operation in the country. The company also operates facilities on Love Field at Dallas and at the New Orleans airport.

Walker and Petross Form Sales and Service Company

D. C. (Clint) Walker and W. H. (Pete) Petross have formed the firm of Walker Oil Well Specialties Co., to handle the sales and service ac-

D. C. WALKER

W. H. PETROSS

counts of Rector Well Equipment Co., Inc., including casing heads, tubing heads, christmas trees, and "Fulbore" cementing equipment; Culp Engineering Co.'s patented "Culp-Lap" plug and gate-valve repairing, and as suppliers for B. & W., Inc., scratchers "Latch-on" centralizers, liners, and packers, for the state of Oklahoma.

Stocks of Rector equipment and B. & W., Inc., equipment will be carried at Oklahoma City and Culp-Lap patented plug and gate-valve repairing will be maintained at both Tulsa and Oklahoma City. Offices will be located at 1312 Hunt Building, Tulsa, after February 1.

Walker has spent his lifetime in the drilling and production end of the industry covering most foreign fields and all continental United States fields. He was technical advisor on drilling and production equipment for Hinderliter Tool Co. when he resigned. Petross was with Hinderliter as district manager at Casper, Wyo.

Jenkins Joins Clark Bros.

Clark Brothers Co., Inc., Olean, N. Y., announce the appointment of Dick Jenkins to its Los Angeles office's technical service department. He is a 1948 graduate of Yale Sheffield School of Engineering.

Houston Bank of Commerce Advances Doherty and Buck

Directors of the Houston National Bank of Commerce have promoted R. P. Doherty, executive vice presi-

R. P. DOHERTY

E. O. BUCK

dent, to president, and E. O. Buck, manager of the oil loan department, to vice president. Doherty has been associated with the bank since 1917 and had been executive vice president since 1934.

Buck resigned as southern manager of Rowan Drilling Co. in 1948 to accept the appointment in the bank. During the war he served as director of production for the Petroleum Administration for War in District 3. He has been associated with the oil industry since 1926.

Nicholson Joins Staff of Southern Engine & Pump

John D. Nicholson, who has recently been associated with Kennecott Copper Corp., and with Standard Oil Co. (Ind.) in its Sugar Creek refinery, and who prior to the war was with Humble Oil & Refining Co., at Baytown, has joined the staff of sales engineers of Southern Engine & Pump Co., at Houston.

Nicholson is a graduate engineer from Missouri School of Mines and Metallurgy. He has done engineering work with major oil companies, both before and after the war.

Hooker Promotes Newton

E. K. Newton, who has been with Hooker Electrochemical Co. as an engineer since 1910 and has held various engineering positions with the company, has been appointed chief engineer, replacing T. L. B. Lyster, who

(Continued on page 394)

Classified Advertising

The Market Place for the Oil Industry

UNDISPLAYED

All ads, 12 cents a word. Minimum charge, $3.00 per insertion.
Centered Line, any ad, $1.00.
Box Numbers count 9 words when replies are to be sent to our Tulsa Office. Replies forwarded without charge.

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P. O. Box 1260, TULSA, OKLAHOMA

EQUIPMENT FOR SALE

FOR SALE: Wilson Mogul Drilling Rig. Lee C. Moore 87′ Jackknife Derrick. Compound GAK Waukesha Motors. 6x16 Wilson Snyder Pump. Capable of drilling 5000 ft. Complete rig in good condition. Terms if desired. Blalack Drilling Company, Box 1145, Gladewater, Texas. Phone 324. Price $35,000.00.

FOR SALE

CLARK 40 HP 4-cycle, heavy duty gas engine. A good buy. Can arrange to have Clark Bros., Olean, inspection. Frank S. McDiritt, Eldred, Penna. Phone 87R24.

MURPHY DIESEL, ME-66

Brand New—Sacrifice—At OEM's Cost 1103 cu. in., 6-cylinder, 180 HP, @ 1200 RPM. Never been used. 20% off list. Contact: Box C-613, The Oil and Gas Journal, Tulsa, Oklahoma.

SHOT HOLE DRILLS
LARGE AND SMALL

All are truck mounted, rotary chain pull down, smallest pump size 3½ x 5. Some are in excellent condition, others need repairs. Price FOB Dallas from $3,000.00 to $8,000.00 including truck. For details write 8800 Lemmon Ave., Dallas 9, Texas.

FOR SALE
GAS ENGINE GENERATORS

3—375 KVA 60 cy 3 ph 440 volt Elliott Alternators direct-connected to Ingersoll-Rand 400 RPM gas engines. Complete with exciters & switchboards. Can be rewound for 2300 volts. Running and in operation at this time.

INDEPENDENT ELECTRIC MCHY. CO.
300 Southwest Blvd.
Kansas City 8, Missouri

EQUIPMENT FOR SALE

TWO TOM DIETLE Pipe Pulling Machines, double-drum, double-brake, with spudding attachment. Phones 2-0061 and 7-5013, Tulsa, Oklahoma. Mailing Address: Dietle and Martin, 917 No. Elm, Eureka, Kansas (Phone 1032).

FOR SALE: Three Worthington horizontal duplex hot oil pumps, 23 x 5 x 24, with forged steel liquid ends, rated 750 pounds square inch discharge pressure. Used in refinery operation. Good for irrigation projects, plastic industry, paper plants. Good condition. R. H. Armstrong, Republic Oil Refining Company, Texas City, Texas.

NEW DRILL PIPE

Approx. 5,017′ new 4½" OD, 1660#, Youngstown API, Internal, Upset, Seamless Drill Pipe, Grade-D, Range-2, for Reed Super Shrink Grip Tool Joints w/ Forster Protectors—less tool joints. Price F.O.B. Oklahoma City, Oklahoma ..... $1.85 per ft.
2,000′ Ditto w/ Reed Super Shrink Grip Tool Joints and protectors. Price F.O.B. Seminole, Oklahoma ..... $3.75 per ft.
H. A. McCarthy, 310 Thompson Bldg., Phone 5-3296, Tulsa, Oklahoma.

FOR SALE

12—230 H.P. Type 10 Bessemer New 17" Power Cylinders complete ready to run with 16" to 18" Compressors. 1—230 H.P. Clark Horizontal with Compressors. Located Salem, Illinois.

ENGLE PETROLEUM, Incorporated
Box 655, Evansville, Indiana

FOR SALE

Three 8000′ capacity steam rigs complete with 129′ releg derricks and substructure, blowout preventers, drill pipe, and everything ready to put to work. Rigs located at or near Alice, Tex.

For further information, write

AL BUCHANAN DRILLING COMPANY
2114 Alamo National Bldg.,
San Antonio, Texas

or Frank Buchanan, c/o Al Buchanan Drilling Company, Box 1308, Alice, Texas

EQUIPMENT FOR SALE

FOR CABLE TOOLS
DEGEN PIPE AND SUPPLY CO.
Box 107, Red Fork Station, Tulsa, Oklahoma

2—M.C. 350 Bethlehem rotary drilling rigs complete with 127′ Lee C. Moore Cantilever (Jack-knife) derricks, less drill pipe and drill collars. For further information write: Sharp Drilling Company, P.O. Box 1271, Midland, Texas.

SAVE WITH SAFETY—Very Good Used Wire Line—Any Size or Length up to 5,000′—Respooled for Your Inspection — Cable Tools For Sale. General Tool & Supply Co., P.O. Box 4387, Phone 61335, Oklahoma City, Okla.

WELL drilling spudders, beams, light rotaries, core drills, tools, casing. Used equipment at money saving prices. Spang and Mills new tools. Leschen lines. Everything for well drilling. Pressey & Son, Pueblo, Colo.

TEN ARMY SURPLUS UNUSED
20 K.W. SINGLE PHASE GENERATORS

complete with exciters, switchboards, etc. Mounted on a sub-base.

Direct connected to
4-cyl 46 H.P. LeRoi gasoline engine
complete with starters, etc.

R. O. MURPHY & COMPANY
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NEW PLAIN HOT ROLLED MILD STEEL SHEETS AND PLATES IN STOCK IN NEW YORK

Approx. 150 tons—12 USG Size 36" x 96"
In Stock in New York and Baltimore
Approx. 220 tons ¼" USG Size 60" x 80" and 60" x 240"
For February Shipment to North Atlantic or Gulf Ports
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TRUCK-MOUNTED ROTARY RIG

for Drilling
Slim-Hole Oil Wells—Shot Holes—Water Wells

E. L. I. Model M6-W, mounted on, and powered by 1½ ton 1946 Model Studebaker truck with new engine. Equipment includes 27′ high mast; 16′ kelly; 4" x 5" centrifugal pump; various sizes slips, elevators, bailers, and wire lines; tool box; 400-gallon skidded water tank; hand tools; hose; subs and 1000′ 2⅜" IF drill pipe in 15′ lengths. Included also are 1½ ton 1946 Model Chevrolet truck with modified oil field body with suction pump for filling water tank and 6" x 6" aluminum duplex mud pump powered by HP-217 Buda engine. Chevrolet truck and duplex pump are optional items.

LUCEY PRODUCTS CORPORATION
OIL WELL SUPPLIES
TULSA, OKLAHOMA

FOR SALE: One New 1948 ELI Model M-7 Rotary Drill, Truck mounted, complete to start drilling, with 2000′ 2⅞″ Drill Pipe. One 1947 ELI Model M-6 Rotary Drill, Truck mounted, complete with large light plant, extra U-4 International Engine, large tool house, and misc. hand tools, less drill pipe. $8650.00. One 1947 Franks Model FA Heavy Duty Rotary Drill, Truck mounted, complete with large light plant and portable tool house, less drill pipe. $7500.00. Utility & Industrial Supply Company, Box 168, Mt. Pleasant, Michigan.

FOR SALE IN STOCK, Quick Delivery:

New Welded Steel Tanks and bolted; Used Welded and bolted Steel Tanks, for Oil, Water, Gasoline, Grain, etc. Tool Houses, any size, built ready to go. Call or write

INDEPENDENT TANK CO.
Phone 977, Box 102 Seminole, Okla.

OIL FIELD MACHINE SHOP

Complete plant located in excellent Oklahoma town has become surplus, due to change in company plans, and is now offered for sale.

FULLY EQUIPPED

Machinery and equipment includes: 6 lathes, 2 drill presses, 3 electric welders, acetylene cutting and welding equipment, 2 pipe machines, 2 electric drills, steam hammers, hydraulic press, band saw, power hack saw, bending rolls, gas furnaces, cranes and chain hoists, complete tool equipment, jigs and fixtures.

ADEQUATE BUILDINGS

Main building wood frame and corrugated iron with 8100 sq. ft. floor space. Four smaller buildings with 2000 sq. ft. floor space. All located on 140′ by 200′ tract on railroad. Land and buildings included.

NOW OPERATING

Excellent opportunity to step into going business with trained personnel. Ideal setup for manufacture of oilfield tools or equipment.

Write or wire
404 Perrine Building,
Oklahoma City

FOR SALE: 1—7¼″ X 15′ Drill Collar (good condition)—$400.00; 1—6¾″ X 23′ Drill Collar (good condition)—$500.00; 1—7 X 12 Star Steel Tool House—$300.00; 1—4,000 Gallon Butane Tank like new, skidded, can license anywhere—$1600.00. Phone 4-1213, Wichita, Kansas.

PIPELINE Construction Equipment for Sale: Pipe cleaning machine with priming head, traveling or stationary, 6″ to 12″, excellent condition, $1,350. Two T40 International tractors with pipelayer attachments, good condition, very cheap. Contact C. W. Sternberg, 8250 Wier Drive, Houston, Texas. Phone Preston 7043.

PIPE FOR SALE: A-1 used lapweld pipe at low prices. 7″ OD 17# casing at $1.35 per foot, 5½″ OD 13# casing at $1.35 per foot, 2⅜″ OD 4½# tubing at 36 cents per foot. Write A. A. Staub, 2027 16th St., Parkersburg, W. Va., Phone 895.

FOR SALE: 1 Cardwell Model "M" Double Drum Mobile hoist with 55 ft. double pole, Caterpillar Motor, fully equipped, 6″ x 12″ pump. Everything for workover or shallow drilling. Box C-763, The Oil and Gas Journal, Tulsa, Oklahoma.

STEEL TANKS IN STOCK

2—74,000 bbl. like new 114′ X 40′. Tanks are clean—at Morgantown, W. Va. 5—1000 bbl. and 4—100 bbl. bolted. 6—25,000 gal. 10′6″ by 38′9″ horiz. ⅜″ shell. At New York.

DARIEN CORP.
60 E. 42nd St., New York 17, N. Y.

HOT OIL PUMPING UNITS

Two Cooper-Bessemer gas engine driven hot oil pumping units, complete. One 612 GPM, 550 p.s.i.g. pressure differential pump with 400 HP engine. One 324 GPM, 800 p.s.i.g. pressure differential with 240 HP engine. In excellent condition. Would consider selling either GNG-8 or ENG-8 engine separately. Inquire

E. B. McCormick, Chief Engineer

COSDEN PETROLEUM CORPORATION
Box 1311 Big Spring, Texas

FOR SALE

12—25,000 gallon tanks, 10′6″ d x 40′6″ long, horizontal, flanged and dished heads, lap weld construction, designed for 60# PSI, ⅜″ shell, 7/16″ plate in heads, in excellent condition.

5—12,000 gallon tanks, 8′ d x 32′ long, ¼″ plate throughout, butt weld construction, flanged flat heads, horizontal, in excellent condition.

ROGERS AND WRIGHT, INC.
710 Peoples Building
Charleston, West Virginia
(Phone 30-171)

FOR SALE: Portable Power Wilson Drawworks for shallow drilling to 1500′. Has 6-cylinder International Motor, 65′ mast with 4-sheave Roller Bearing crown block, all unitized long steel skids. Price $4500.00 located, C. M. BARRINGTON YARD, Coleman, Texas.

FOR SALE: Near Burrton, Kansas, 1—25′ x 84′ x 12 Bay, 13 Louver, Pritchard Atmospheric Cooling Tower, Type DW 36-12B with cooling tower coil shed. Distillation unit recently moved, rendering tower surplus. Cities Service Oil Co., Patridge, Bartlesville, Okla.

FOR SALE: Fred Cooper Model U. E. S. Well service winch equipped with telescope pole and spudder. Rod and tubing capacity 5000′. Spools 6160′ ¾ drilling line. Mounted on 1943 G. M. C. 6x6 Truck. Also have ¾″ drilling line, drilling tools, fishing jars, etc. Will sell all or part. Geo. Barnard, Madison, Kansas.

FOR SALE: Near Burrton, Kansas, 1—18′ x 101′ x 35′ Fluor Atmospheric Cooling Tower Model 12-N with 4 wood water pans. Standing. Cities Service Oil, Patridge, Bartlesville, Okla.

FOR SALE: 13,000 feet 10¾″ O.D. 28 pound Plain End Used Line Pipe. Commercial Metals Company, P.O. Box 1046, Dallas, Texas.

TWO natural gas generators, one 750 KW., one 900 KW., exciters, switchboards, spare parts, less converters. Will take $5,000 for both or will sell separately. A. B. Rowland, 1429 N. Main, Oklahoma City, Okla.

SHOT hole drill on Ford truck, Hyd. lift mast, chain pull down, 3″ solid kelly, 4½″ x 6″ G. D. pump, twin disc clutches. $5000.00. Waters Drilling Service, 69 Beacon Place, Pasadena 8, Calif.

FOR SALE: 1 Cooper-Bessemer, two-stage direct; and one Ingersol-Rand, 50 and 35 HP. Good. Bargains. Phone: 981-W, Wooster, Ohio.

FOR SALE: Three new Buda PCD1879 Diesel Engines. Engines are complete with radiator but less flywheel housings. A real buy at $5,800 each. Also one new 140 HKU Waukesha multi-fuel engine with all Hesselman parts included. Price $1,200. Box C-761, The Oil and Gas Journal, Tulsa, Oklahoma.

A REAL VALUE
7500 FOOT DRILLING RIG

Emsco H46 Draw Works (Reconditioned) new brake drums, sprockets and chains, 40″ type RC hydromatic brake, double deck Regan crown block, 4 sheave gumbo buster traveling block, B6 Emsco swivel, 27½″ Emsco oil bath rotary table, gumbo buster 8″ hook, 7¼″ x 18″ Wilson Snyder power pump with 200 HP DC Westinghouse electric motor. 2—300 HP, 900 RPM, Sterling Viking gas-butane engines with 175-150 DC Westinghouse generators, Marley cooling tower, approximately 8000 Ft. 4½″ OD, 1660# Spang Grade-D drill pipe with Reed Super Shrink Grip Tool Joints, made three wells, rig complete with all accessories, located southern Oklahoma. Inventory on application. Price to sell F.O.B. location, $65,000.00. H. A. McCarthy, 310 Thompson Bldg., Phone 5-3296, Tulsa, Oklahoma.

FOR SALE

6,000-1.66″ O.D. 5.21# .382 Wall Hot Rolled Seamless Alloy Tubing, Plain End, A1S1-4140 Analysis.

20′ Lengths ..... $59.48 cft.

WILSON SUPPLY CO.
A8-5191 P.O. Drawer 19 L.D. 350
HOUSTON, TEXAS

FOR SALE

3713 feet 9⅝ O.D. 40.6# Seamless Oil Well Casing. Run in well but in excellent condition. Priced to sell.

1—125 H.P. 350# Working Pressure "Oil Well Boiler," completely reconditioned and in excellent condition. State inspected. $2250.00 our yard, Okla. City.

POWELL BRISCOE, INC.
1916 First National Bldg.
Oklahoma City, Okla.

USED STEEL TUBING

95,000 ft.	1½″ O.D.	Approx. 9 gauge wall
120,000 ft.	2″ O.D.	Approx. 11 gauge wall
55,000 ft.	2¼″ O.D.	Approx. 11 gauge wall
75,000 ft.	3¼″ O.D.	Approx. 10 gauge wall
80,000 ft.	4″ O.D.	Approx. 10 gauge wall
21,000 ft.	5½″ O.D.	Approx. 5/16″ wall

Single or Double Random lengths—Plain Ends
Beveled for Welding

Write — Wire — Phone

SONKEN-GALAMBA CORPORATION
2nd and Riverview (X-413) Kansas City 18, Kansas. THatcher 9243

EQUIPMENT WANTED

WANTED: 3½" OD or 4½" OD used drill pipe, 3½" OD line pipe or tubing. SCHAFER FLOW, INC. Box 578, Pratt, Kansas. Atten.: J. L. Crowder.

EQUIPMENT WANTED

Am interested in purchasing good-second-hand, unit 15 rig, with either 2 or 3 motor compound. Please send description, price, and location to: Box C-732, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED: 1500′ to 2000′ of good used 20′ drill pipe, 2⅞" or 3½" OD, prefer full-hole tool joints. 2019 W. T. Waggoner Bldg.

WANTED—Good condition, 30 to 50 H.P. Oil Engine. Also 35 H.P. gas engine. Both with clutches. R. E. French, Gridley, Kans.

WANTED: Want to buy a 2 or 3 drum hoist and steel tubing mast from shot or slim hole machine. Mast should be about 35 feet long. Also want rotary table with 13-inch or larger opening weighing less than 1300 lbs. Omaha Drilling Corp., 624 Service Life Bldg., Omaha 2, Nebraska.

WANTED—TANKS

Want buy 55,000 and 80,000 bbl. riveted tanks with steel roofs and structures. Standing or knocked down.

Write—Wire—Phone

R. H. TECKLENBORG CO.
Trinity 2091
811 W. 7th Street
Los Angeles 14, California

HELP WANTED

WANTED: Supervisor for refinery pump and engine maintenance. Applicant must have engineering training and experience. Good salary with house furnished at low rent. Box C-746, The Oil and Gas Journal, Tulsa, Oklahoma.

RESEARCH INSTITUTION wants engineer with experience in natural gas engineering for research in laboratory and field on gas-flow. Excellent opportunity for authorship of papers. Please give references, experience and salary expected. Box C-764, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED—Geologist with at least six years' well completion experience in Texas Gulf Coast Area. Box C-758, The Oil and Gas Journal, Tulsa, Oklahoma.

SALES MANAGER

Oil Field Equipment

Outstanding opportunity for man experienced in sales management capable of developing volume sales in production and drilling equipment. Location in Southwest. Salary and liberal bonus arrangement will give the right man very substantial earnings. Prefer applicant under 45. Replies held in strict confidence. Box C-740, The Oil and Gas Journal, Tulsa, Oklahoma.

ENGINEERING

During the next several months we will increase our Engineering Organization engaged in the design of Oil Refinery Plants and Power Plants. Location Cleveland, Ohio. The men we need should be qualified as draftsmen, designers, checkers or in higher engineering skills on design of piping, instrumentation, pressure vessels, structural steel, concrete, mechanical or electrical. For presenting your qualifications and prompt consideration, write to us for application form.

ARTHUR G. McKEE & CO.

2300 Chester Ave., Cleveland 1, Ohio

HELP WANTED

GROWING Independent in Rocky Mountain area has opening for a chemist with 1-3 years experience in a petroleum laboratory. Reply Box C-762, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED! Sales and Service Engineer. Must be familiar with drilling and production operations. Moderate salary during 60 day training period. Substantial increases periodically upon evidence of satisfactory progress. Must pass usual industrial physical examination and be willing to work in any area East of the Rocky Mountains except Wyoming and Montana. Applications from employes of contemporary firms will not be considered unless accompanied by letter from present employer indicating willingness to release without jeopardizing relations between companies. For further information write Baker Oil Tools, Inc., P. O. Box 3048, Houston 1, Texas.

SALES ENGINEER

Experienced in gas compressing equipment. Address Manager of Sales, The J. B. Beaird Company, Inc., Shreveport, Louisiana.

WANTED: Steam Boiler Plant and Utility Foreman. Must have engineering background with 3 to 5 years practical experience. Location: newly constructed oil refinery in Rocky Mountain Area. Write giving training, experience, references and personal details to: The Carter Oil Company, P. O. Box 2094, Billings, Montana.

OIL Industry Employment Service, 319 Castle Bldg., Tulsa, Okla. No fees. Needed in Persian Gulf area, Middle East. Petroleum Engineers, salary open. Rotary derrickmen $495. Supervisory chefs $400. Oilfield welders $425. Truck Foreman $450 Write for details.

WANTED: Experienced geologist, capable of well sitting in Kansas fields, for position with aggressive, independent oil company. State qualifications and salary desired in first letter. Box C-754, The Oil and Gas Journal, Tulsa, Oklahoma.

SALES ENGINEERING OPPORTUNITY

Large established manufacturer heat transfer equipment has opportunity for young engineer, preferably having 5-10 years experience oil refinery operation or design. Engineer selected will be trained for sales engineering and application engineering on heat transfer equipment. Replies treated in confidence. Describe complete background in first letter.

BOX C-759
The Oil and Gas Journal
Tulsa, Oklahoma

SALES EXECUTIVE

SALES ENGINEERING REPRESENTATIVES

Progressive manufacturer, established since 1890, seeks a Sales Representative with technical training and mechanical aptitude, preferably men 30 to 38 years old, with some field experience.

Applicant must qualify for interesting work in the Southwest oil country and eventually become a District Manager in some one of company's territories.

Address: Box C-755, The Oil and Gas Journal, Tulsa, Okla.

SITUATIONS WANTED

REFINERY MANAGER wishes to make change. Range $10,000 to $12,000 per annum. Write Box C-765, The Oil and Gas Journal, Tulsa, Okla.

AVAILABLE JANUARY 1—Man, 40 years old, with 23 years experience as assistant pipe line supt., general foreman of construction and maintenance on pipe line and refinery work. Understands operation of pipe line and refineries. Would consider foreign employment. Can furnish written recommendations. Box C-709, The Oil and Gas Journal, Tulsa, Oklahoma.

JUNIOR OIL EXECUTIVE: Seven years' experience with independent oil operators. Familiar with all phases producing industry especially office procedure, promotions, accounting, and taxation. University degree in business. Age thirty. Presently employed desiring more pleasant association with better opportunity. Box C-737, The Oil and Gas Journal, Tulsa, Oklahoma.

SITUATIONS WANTED

OFFICE manager-secretary now employed desires change. Knowledge of Spanish. Will consider Latin-American position. Single, non-drinker. Box C-760, The Oil and Gas Journal, Tulsa, Okla.

ENGINEER-JOURNALIST: M.A. in Technical Journalism, Oklahoma A. & M.; B.S. Mechanical Engineering, University of Oklahoma. Looking for position to utilize background. John Cummings, Jr., Box 25, Crescent, Oklahoma.

CHEMICAL Engineer with considerable experience in design, operation, and supervision of petroleum processes including vacuum stills, catalytic and thermal cracking, and lube oil solvent extraction. Desires responsible position with progressive company. Box C-766, The Oil and Gas Journal, Tulsa, Oklahoma.

ADMINISTRATIVE, now supervising organization planning division, major oil company, age 40, experience supervising industrial relations, personnel, safety training, process. Desire connection domestic or foreign ($9,000 minimum). Box C-735, The Oil and Gas Journal, Tulsa, Oklahoma.

YOUNG married man with law degree (B.A. and L.L.B.), payroll experience and claim adjusting, desires connection in Mid-Continent area. Available March 1. Box C-767, The Oil and Gas Journal, Tulsa, Oklahoma.

AIRLINE PILOT: 8,000 hours of time and multi-engine flying. Perfect safety record. Hold valid airline transport pilot license. Desire position as company pilot. Excellent references from former employers. Sales experience. Quinn N. Sowell, 2727 Lynfield Rd., Houston, Texas.

GRADUATE GEOLOGIST, 10 years experience, six years supervisory capacity. Qualified for district or chief geologist. Central Texas and Rocky Mts. Box C-718, The Oil and Gas Journal, Tulsa, Oklahoma.

PURCHASING AGENT'S ATTENTION: We have the opportunity of representing some top executives in our service. One of our clients is desirious of locating in the southwest area. He has had twelve years of administrative purchasing of materials and inventory control. His experience includes work in all major steel mills and is able to secure steel on a long range program. He is also experienced in tanks, pipe line, casting, rigs, steel fabricating, electrical equipment, castings, gas engines, tools, chemicals, wood, and paper products. Age 41, Mechanical Engineer. If your firm is in need of this top executive please contact The Chas. J. Loveless Personnel Service, 508 Mayo Building, Tulsa, Oklahoma.

LEGAL BLANKS

BURKHART LEGAL BLANKS since 1908. Oil-Gas (all states), Business, Real Estate, Legal Forms, Leases, Revised With Government Regulations, Commercial Printing, Catalog and Samples on request. Burkhart Printing & Stationery Company, 115 South Cincinnati, Tulsa 3, Oklahoma.

GEOPHYSICAL SERVICE

RADAR SURVEYS—Outline areas of possible saturation. Also Show faults. For further information write, Geotronic Laboratories, 421 S. Locust Street, Centralia, Illinois.

MAILING LISTS

OPERATING Personnel Lists of Production, Refining, Natural Gasoline, Pipelines, Drilling, Supply Stores, etc. Guaranteed. Catalogue Free. Our 29th Year. Oil Industry Mailing List Co., Box 2603, Tulsa, Okla

WANTED

ESTABLISHED manufacturers' agents seek additional representation New York metropolitan area. Interested in Petroleum, Chemical Processing and Industrial Equipment. Box C-756, The Oil and Gas Journal, Tulsa, Oklahoma.

DISTRIBUTORS WANTED

Complete line heavy duty natural gas engines, 10 to 275 HP. Profitable territories available. For information write:

LORIMER DIESEL ENGINE CO.
16th & Wood Sts., Oakland, Calif.

ROYALTIES

DEEDED ROYALTIES
San Juan Basin & Permian Basin. Write Harry S. Wright, Wright Bldg., Farmington, New Mexico.

ROYALTIES IN HOT AREAS!
Recent strikes have focused attention on Montana's deeper oil zones and major companies are moving fast, drilling and leasing. We buy direct in the field, sell direct to our customers. Write LANDOWNERS ROYALTIES COMPANY, Box 1225, Great Falls, Montana.

WE will buy producing or non-producing oil royalties. Standard Security Company. 115 Broadway, New York 6.

LEASE AND DRILLING BLOCKS

68,000 ACRES; Tennessee timber land; $3.50 per acre; all mineral rights included; get full details. E. Jester, 12744 Vanowen, North Hollywood, Cal.

WILDCATTERS ATTENTION: 440 acres for lease by owner five mi. N.W. Mio, Michigan. Contact: George Shollenberger, Delmar, Iowa.

WE have some good drilling blocks, close in leases to good production. Will take small override, in Clinton County oil field. John A. Damron, Albany, Kentucky.

WANTED to Purchase by Independent Oil Company—Oil Production in Kentucky, Indiana and Illinois. Will consider leases producing 25 to 250 barrels daily. Box C-757, The Oil and Gas Journal, Tulsa, Oklahoma.

HOTTEST play is Four Corners Area, New Mexico, Colorado, Utah, Arizona. I offer leases or drilling blocks well known geological structures on Black Mesa, Apache County, Arizona, also Navajo County proximity General Petroleum seven thousand foot test now drilling. Fred Blair Townsend, Luhrs Tower, Phoenix, Arizona.

LEASE ACREAGE—Northeastern Arizona near General Petroleum Companies well now drilling at about 2,000 feet. $15.00 per acre and up depending on proximity to well. Lund Engineering Company, 2838 Potrero Road, Phoenix, Arizona.

WANT Development; Have Two Thousand acres offsetting flowing production, Central Texas. Best geology. Four possible producing horizons. Warrants Rigid Investigation. Don't answer unless mean business. P.O. Box 287, Eastland, Texas.

A GOOD investment: New 86 acre, 10 year lease, less than one mile from production, and near Barnsdale well now drilling, Shelby County, Texas. A real bargain at $6 per acre. C. A. Parker, Box 451, Center, Texas.

PROSPECTIVE new shallow, high gravity oil field, N.W. Ga. Mississippian, Devonian shale and limestone exposures. Good structural indications. Drilling deals considered Dietzen, Rt. 3, St. Elmo, Tenn.

LEASES ROYALTIES

PRODUCING OR NONPRODUCING

Texas, New Mexico, Oklahoma, Louisiana and Illinois

Inquiries Invited

B. D. BUCKLEY

60 Broadview Drive, Clayton (5), St. Louis, Missouri

BUSINESS OPPORTUNITIES

FOR INVESTMENT or Loan drawing 15% interest, contact Mr. Hubbard of Hubbard & Boeye, Attys., Safety Bldg., Rock Island, Illinois.

ATTENTION MANUFACTURERS AND MANUFACTURERS AGENTS

Warehouse and office space with telephone service available on South East 29th Street, main supply row, Oklahoma City, Okla.

Box C-743, The Oil and Gas Journal, Tulsa, Okla.

Equipment Men

(Continued from page 390)

has retired. Lyster will continue his service to the company as consulting engineer.

A. J. Rogers to Represent Franks in Southwest Texas

A. J. "Red" Rogers has been appointed sales representative for Southwest Texas with headquarters in Corpus Christi, for Franks Manufacturing Corp. of Tulsa. Rogers is an "old timer" with Franks, having been with the company for 13 years, with considerable time spent as service manager in a Texas area. Before joining Franks, he was employed by Patterson Steel Co. and by Standard Paving Co. of Tulsa.

Crescent Tool Co. Appoints Coltrane as Sales Manager

L. L. "Curly" Coltrane has been appointed sales manager of Crescent Tool Co., to coordinate an expanding sales operation for the hydraulic boom crane.

Coltrane served 4 years with Emsco and was then transferred to Continental Supply Co., serving as representative for 4 years in South America. He will make his headquarters at the company's Long Beach plant.

Donovan to Manage Mack's San Francisco Branch

J. E. Donovan, who has been appointed manager of Mack Truck, Inc.'s San Francisco branch, assumes direction of one of the largest of Mack's 67 direct factory branches. He has served 25 years with the company during which time he held various positions, the last being that of special sales representative in charge of national and fleet-owner accounts in the San Francisco area.

Gray, Ludvigsen Move Up In Fuller Organization

J. Seton Gray, president of Fuller Manufacturing Co., Kalamazoo, Mich., for the last 14 years, has been named

J. S. GRAY

E. L. LUDVIGSEN

chairman of the board of directors. Succeeding Gray as president is E. L. Ludvigsen, formerly vice president and general manager of the transmission division. Associated with Fuller for 20 years, Ludvigsen has served successively as sales engineer, sales manager, and vice president and general manager of the transmission division. Harold E. Brey, formerly vice president and general manager of the unit drop-forge division, was named executive vice president.

Two new vice presidents were named by the board of directors. William E. Niness is now vice president in charge of sales, and Thomas Backus, vice president in charge of engineering. Niness has been with Fuller since 1928, serving as sales engineer and later as sales manager. Backus joined the company in 1935 as sales engineer and served successively as assistant chief engineer and chief engineer.

George Stroup Joins Nemco

George W. Stroup, Jr., recently joined the sales department of Nelson Electric Manufacturing Co. in Tulsa where he is representing the company as a sales engineer in the Tulsa territory. Stroup acquired previous sales and engineering experience while employed by Roach Equipment Manufacturing Co. and Buda Engine Sales & Service, Inc. He studied mechanical engineering at Oklahoma A. & M. College.

Sharp Goes to Harvey, La.

W. G. Sharp, former manager of the Continental Supply Co. store at Houma, La., has been transferred to Harvey, La., as manager of the Continental store there. He has been replaced at Houma by L. W. Todd, formerly bookkeeper at the Houma store.

CALENDAR OF EVENTS

1949

January

Western Petroleum Refiners Association, regional technical-industrial relations meeting, Washington-Youree Hotel, Shreveport, La., January 28.

February

Conference on Reservoir Engineering, University of Texas, Austin, Tex., February 8-10.

American Institute of Mining and Metallurgical Engineers, annual meeting, Fairmont Hotel, San Francisco, February 13-17.

American Society for Testing Materials, spring meeting and A.S.T.M. committee week, Hotel Edgewater Beach, Chicago, Ill., February 28-March 4.

March

American Petroleum Institute, Southwestern district, Galvez Hotel, Galveston, Tex., March 9-11.

American Association of Petroleum Geologists, regional meeting; Society of Exploration Geophysicists, and Society of Economic Paleontologists and Mineralogists, Jefferson Hotel, St. Louis, Mo., March 14-17.

American Petroleum Institute, division of production, Mid-Continent district meeting, Mayo Hotel, Tulsa, March 23-25.

New England Gas Association, Hotel Statler, Boston, March 24-25.

Western Petroleum Refiners Association, thirty-seventh annual meeting, Plaza Hotel, San Antonio, Tex., March 28-30.

American Chemical Society, division of petroleum chemistry, spring meeting San Francisco, March 27-April 1.

April

Texas Independent Producers and Royalty Owners Association, Houston, April 1.

American Petroleum Institute, division of Refining, mid-year meeting, Shamrock Hotel, Houston, April 4-7.

American Society of Lubrication Engineers, annual meeting, Pennsylvania Hotel, New York, April 11-13.

National Association of Corrosion Engineers, annual convention, Netherlands Plaza Hotel, April 11-14, Cincinnati, Ohio.

Southwestern Gas Measurement Short Course, University of Oklahoma, College of Engineering, Norman, Okla., April 12-14.

National Petroleum Association, Hotel Cleveland, Cleveland, Ohio, April 13-15.

Natural Gasoline Association of America annual meeting, Texas Hotel, Fort Worth April 20-22.

Southern Gas Association, annual convention, Buena Vista Hotel, Biloxi, Miss., April 20-22.

American Petroleum Institute, Eastern district, William Penn Hotel, Pittsburgh Pa., April 27-29.

May

Independent Petroleum Association of America, midyear meeting, Roosevelt Hotel, New Orleans, La., May 3-4.

Oil-Heat Institute of America, national oil-heat exposition and annual convention, Boston, Mass., May 16-20.

American Gas Association, natural-gas department, spring meeting, French Lick Springs Hotel, French Lick, Ind., May 9-10

Interstate Oil Compact Commission, spring quarterly meeting, Roosevelt Hotel, Jacksonville, Fla., May 10-12.

American Petroleum Institute, division of production, Pacific Coast district meeting, Biltmore Hotel, Los Angeles, Calif., May 12-13.

Instrument Society of America, annual spring meeting, Royal York Hotel, Toronto, Canada, May 12-13.

American Petroleum Institute, Rocky Mountain district, Gladstone Hotel, Casper, Wyo., May 26-27.

Natural Gas and Petroleum Association of Canada, annual meeting, Hotel London London, Ont., Canada, May 26-27

Fourth Annual Short Course in Gas Technology, sponsored by Southern Gas Association, Texas College of Arts and Industries, Kingsville, Tex., May 30-June 1.

June

American Society for Testing Materials fifty-second annual meeting, Hotel Chalfonte Haddon Hall, Atlantic City, N. J June 17-July 1.

Pennsylvania Grade Crude Oil Association annual meeting, Hotel William Penn Pittsburgh, Pa., June 16-17.

September

National Petroleum Association, Hotel Traymore, Atlantic City, N. J., September 14-16.

October

National Lubricating Grease Institute Hotel Roosevelt, New Orleans, La., October 3-5.

American Gas Association, annual convention, Chicago, Ill., October 17-20.

NOMADS

Houston Nomads, second Monday of each month, Ye Ole College Inn, Houston.

Los Angeles Nomads, second Wednesday each month, Jonathan Club.

States Challenge Court On Suit Over Tidelands

(Continued from page 157)

court itself noted that no question had been raised as to its jurisdiction. California, he reminded the court, did not raise an objection when the tidelands case was brought in 1947.

"The Texas case presents a type of constitutional interpretation which this court has often condemned," Kemp said. "Because the judges thought it important in 1892 that the federal Government should be permitted to sue a state, they assumed that the framers must have had the same view. Actually the framers of the Constitution thought it vitally important not to permit the federal Government to sue a state without its consent, and expressly refused to extend any such consent in the Constitution. . . . This court has often held that it is the Constitution which binds it, not the constructions which have been placed upon that instrument by the views of judges."

Kemp also argued that it is appropriate that Congress deal with the tidelands issue.

"Under international law, and in the intergovernmental relations between the states and our federal Government, many treaties and agreements are arrived at in a continual course of negotiation," he said. "Thus, if the federal Government decides, as a matter of policy and necessity for future national defense, to conserve the oil and other resources within the areas here involved, it can seek to do so through an orderly and fair procedure. Under the Constitution, such matters of policy are for Congress, the legislative branch of the Government. For instance, Congress may lay down a basic policy that the conservation of those resources should be carried out by the federal Government, and authorize officials of the federal Government to negotiate some joint arrangement with the states, or to acquire the areas involved by purchase or eminent domain."

The Government's suit, Kemp asserted, illustrates the reasons for the reciprocal immunity from suit which was designed to remain between federal and state sovereignties, for here the federal Government is not only demanding property rights and natural resources within the state's boundaries, but also large sums of money which, if the claims were upheld, the state might be unable to pay without impairing vital functions of government. And, he added, "we know of no legal process by which the federal Government can enforce such a claim."

Chart on Michigan Basin Is Released by Bureau

A new chart that gives the results of a recent study of the Upper Ordovician and Lower and Middle Silurian rocks in the Michigan basin has been published by the U. S. Geological Survey. The discovery of gas in rocks of Middle Silurian age in Howell field, Livingston County, Mich., has aroused interest in the possibility of commercial production from rocks of this age in other areas of the basin.

The chart was prepared in cooperation with the Michigan Geological Survey Division, Department of Conservation, and the department of geology, University of Michigan. Copies of the chart, "Thickness and Lithology of Upper Ordovician and Lower and Middle Silurian Rocks in the Michigan Basin," may be purchased at 75 cents per set from the Director, U. S. Geological Survey, Washington 25, D. C.

Hubbard Will Head Committee for A.P.I. Meet

HOUSTON.—E. P. Hubbard, Gulf Oil Corp., Houston, has been named chairman of the general arrangements committee for the spring meeting southwestern district, of the American Petroleum Institute's division of production.

The meeting is scheduled for March 9-11 at the Galvez Hotel in Galveston. Announcement on the details of the program and entertainment will be made at a later date. The program committee, under the chairmanship of E. B. Miller, Tide Water Associated Oil Co., Houston, is already at work.

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